The United States MILLER

Published by E. HARRISON CAWKER. { Vol. 12, No. 6. } MILWAUKEE, APRIL, 1882. { Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

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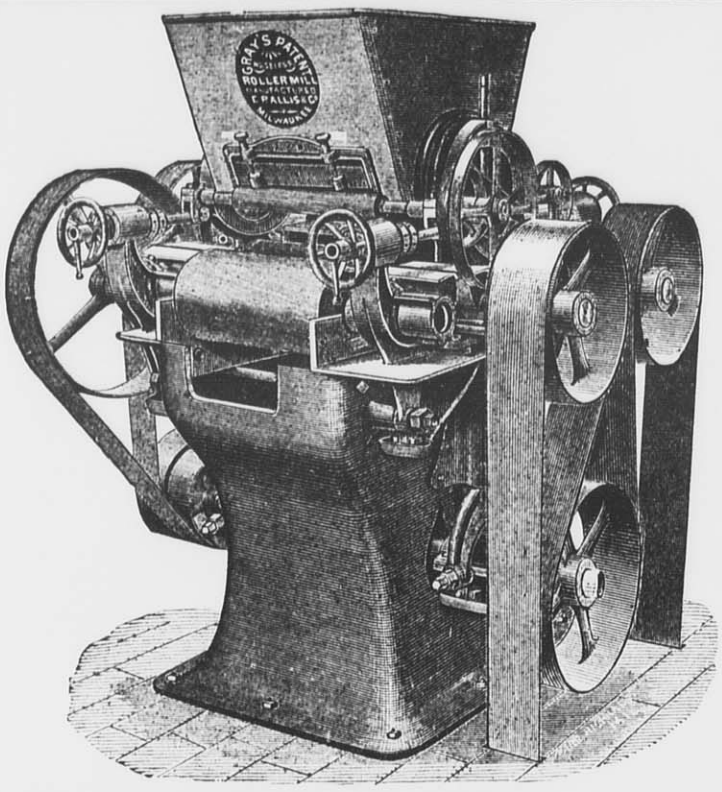

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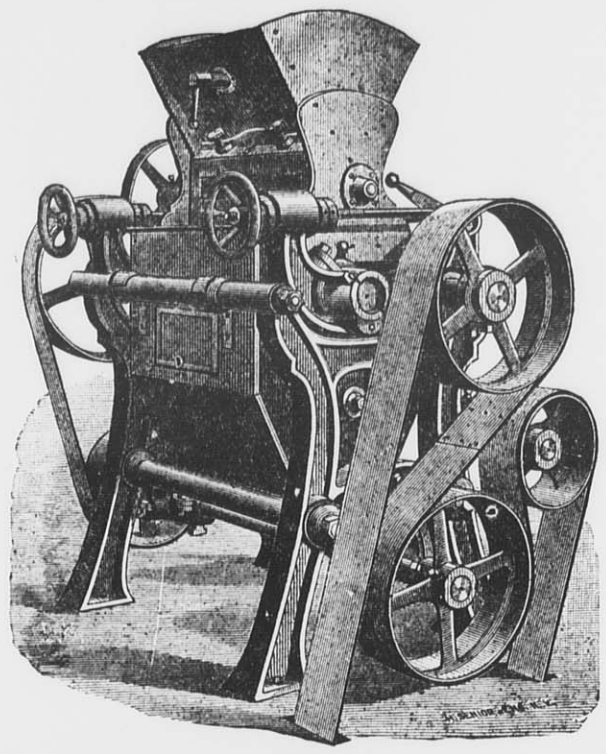

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The Miller's Daughter.

It is the miller's daughter,
And she is grown so dear, so dear,
That I would be the jewel
That trembles at her ear:
For hid in ringlets day and night,
I'd touch her neck so warm and white.

And I would be the girdle
About her dainty, dainty waist.
And her heart would beat against me,
In sorrow and in rest.
And I should know if it beat right,
I'd clasp it round so close and tight.

And I would be the necklace,
And all day long to fall and rise
Upon her balmy bosom,
With her laughter or her sighs,
And I would be so light, so light,
I scarce should be unclasp'd at night.

Tennyson.

Millstones v. Roller-mills.

BY W. B.

As millstones and roller-mills have existed from patriarchal times, and as the former for a long period in the history of milling well nigh superceded the latter, it is not surprising that in the battle of the buhrs v. rolls, now being fought, both combatants should lay claim to victory as looming in the future. There are, however, in the progress of things, certain facts that speak for themselves; facts which, acting as mediators as it were, will eventually settle the day on a satisfactory and permanent basis. Looking back over the historical page of milling, the universal testimony of all ages bears witness to the fact that the roller turns out the finest quality of flour, and that of Dr. Livingstone, hailing from Central Africa, that the fine flour prepared by Sarah for the angels was made by the roller-mill is singularly suggestive of argument. First: Did not Abraham have a quern mill for grinding? Every Hebrew family had one. Was the patriarch an exception? Certainly not. Second: Had not every Hebrew family a roller-mill? Most undoubtedly they had; for however much commentators may have differed in opinion hitherto on the domestic utensils and economy of the Hebrews, in the days of the Patriarch Abraham and those of Moses, the progress of science and a more practical acquaintance with Oriental times, point to the conclusion that Abraham used both the quern and roller-mill, and that he had also two kinds of mortars, the first, a small one for decorticating barley, wheat, etc., by the wet process, and the second a large one for husking split wheat and rice. A very brief common-sense view of the matter will illustrate this.

The meaning of the Hebrew word translated "mortar," Numbers xi. 8—"And the people went about and gathered it (manna) and ground it in mills, and beat it in a *mortar*," means "to boil up," and this is a practical definition of decorticating wheat and barley according to the wet process, and also according to the dry process, viz., Proverbs xxvii, 22—"Though thou shouldst bray a fool in a mortar amongst wheat with a pestle yet will not his foolishness depart from him." Both these practices have come down to the present day. Hence there is now no diversity of opinion. It is otherwise with the grinding of fine flour for the angels and the pounding of manna in a "mortar" in the wilderness, for although the general opinion of commentators is in favor of the hand roller-mill, still in use in the East, yet there are some who think Sarah only sifted out the fine flour from the ordinary milling with the quern, and that the manna was beaten in a small mortar such as was used for decorticating wheat and barley by the wet process. There may be some truth in the latter, as the wet process mortar is often at the present day so applied. We have seen it done. After the wheat or barley is "skinned," as it is generally termed, and the skins or bran removed, the groats are well washed in a charge of pure water so as to clean them. They are then put back into the mortar, and reduced to a paste with the pestle. The paste is then made into "scones" or cakes, and baked on the bread stone; or the paste is otherwise used in cooking. Manna may have thus been reduced to paste, but the more common-sense and practical view of the question is that the manna was generally reduced to flour by the roller-mill, as it was the most suitable for the purpose. The quern, on the other hand, was not so well adapted for grinding manna, and therefore, of the two plans we conclude the Hebrews had sense enough to choose the best, there being no Divine law to the contrary.

Sifting the rough meal produced by the quern would not supply the angels with the finest flour with which the Patriarch Abraham was familiar, and therefore it is more reasonable to suppose that Sarah set some of her maids to grind with the roller-mill, so as to have it fresh and sweet, of the best quality just as the Arab does at the present day when a stranger arrives at his tent.

The reason why the roller mill makes finer flavored flour than the quern is, because all the bran, including the cerealin, maltin, and germ, which it contains, is removed by the sieve, and none of the aroma driven off, only the pure flour of the kernel being used in cooking and baking. Although the ancients were not acquainted with the fact that their dark coloured and badly flavored bread, &c., was due to the presence of cerealin, maltin and germ as ferments, they were familiar with the fact itself, and their knowledge thus far is recorded in the history of milling and baking. Thus the writer of the article "Mills," in Partington's British Cyclopædia," 1835, in describing the grinding of hard wheats in Italy, in which a large portion of the bran was ground into flour, says, "However carefully the flour may be sifted, the bread which it produces, although very wholesome and agreeable, is always dark coloured, and sometimes almost a black." At that time the dark color of the bread was attributed to the kind of millstones used. But since then the discoveries of Mége-Mouriés (of cerealin) and Dubrunfaut (of maltin, *Compt. Rend*, vol, 66, p. 274) and others have proved by experiment to the satisfaction of the scientific world, that the dark color is mainly, if not wholly, due to fermentation, and the decomposition of the more valuable nutritive properties of the flour of which the bread is composed.

Dubrunfaut is of opinion that diastase is merely a product of the decomposition of maltin, and that the latter is the active principle or primary ferment in malt, and as it exists in wheat, maize, and other grain, it follows that it (maltin) exists in the neck of the embryo or germ, between the radicle and cotyledon, as it is there where the nitrogenous matter of the germ is converted into diastase for the purpose of changing the starch and gluten into soluble matter (glucose and probably pepton), so as to start germination, the plumule upwards and the radicle or roots downwards.

In roller milling, when the wheat is cracked and broken down throughout by rollers, the semolina offal contains a large proportion of the germ, mostly flattened into three fragments—the cotyledon, the neck and the radicle, and the light colored bran that lies between the germ and the kernel, in which it (the germ) is embedded, as may be seen on examining the offal, or by disecting a wheat berry or a grain of maize. These flattened fragments of the germ and bran are easily distinguished under the microscope. In the case of maize, when broken down by a disintegrator and the germ and cuticle separated from the semolina by a fan and sieve, the germ is generally found adhering to portions of the cuticle. In America in the manufacture of hominy, roller mills were at one time used, the cuticle and germ being removed by sifting, but there is too much oil in the germ of maize for successful crushing, whilst the cuticle and germ are easily removed as above by fan and sieve. Hence most modern American patentees adopt the disintegrator plan, but there is a wide difference in the details of manufacture which ought to be attended to by our milling engineers and millers, before taking out patents for milling maize for brewing, distilling, and other purposes, as not one of the English patents hitherto obtained for this purpose are worth the paper on which the specifications are printed. All the American, Canadian, and French patents are published in the reading room of the English Patent Office, with a fine selection of agricultural and scientific works, giving illustrated descriptions of such machines, so that patentees are inexcusable if they do not consult them.

Where a combination of millstones and rollers are used, the former for breaking down the wheat to semolina, the semolina offal contains less of the germ, as will be seen on examining it, than the semolina offal of the roller mill, and millers ought to experience no difficulty in accounting for this difference. In practice, however, the eye of the miller is generally so closely concentrated on the flour, as almost to lose sight of the offal. The latter fetches so little money in the market as hardly to be worth looking after, and if the neck and radicle end of the germ with the white bran can be ground into second flour, so much the better for his balance-sheet at his bankers. As to the baker, *alum* will prevent the cerealin and maltin from producing dark coloured bread and it is so cheap that no difficulty stands in his way of keeping accounts square. The day, however, is gone by for thus arguing the subject matter in question, for the public stomach is sick of alum; and brown bread, in spite of all that has been said in its favor, is becoming more and more unpopular as we progress in milling science.

Fine flour is the order of the day—flour that will not change its colour in the baking, White flour and white bread are now household words all the world over, whilst adulterations of every kind are tossed to the winds. If it be true, as doubtless it is, that fine flour, free from cerealin, maltin, and bran ferments can only be produced by the roller milling system, the battle of the buhrs *v.* rolls is already fought and won by the latter. The duty of the milling interest is therefore manifestly to improve the roller milling system, and this is just what is now generally being done. The improvements of last year (1881) are very remarkable, proving the truth of foreign observation that "When Englishmen go in for a thing they soon get a-head of all rivalry." No doubt the Continent of Europe and the United States of America, with our Colonies, are more powerful rivals than hitherto; but, granting this, England does and doubtless will continue to lead the van of progress in milling.

Not a little may be said after all this in favor of millstones in combination with rolls and improved dressing machines. Such wonderful progress has been made with the latter flour dressing machines, that it is not surprising that French milling engineers and millers should throw rollers overboard and go in exclusively for their native buhrs. The germ, about which so much is being said, is chiefly composed of vascular tissue that cannot be reduced to a granular form, so that however finely it may be ground by millstones it can be sifted out and separated from the fine flour. By improved dress and form of the millstones, and the gradual process of grinding, injury to the flour from heating and killing is obviated under proper management.

There is a great deal of truth in this, but when we come to the aromatic properties of the wheat berry and the impossibility of separating cerealin, maltin, and other ferments from the fine flour by sifting, electric purifying, or dressing of any kind, the case of the buhrs become less hopeful. The rasping and tearing action of the dress is objectionable, and the finer and sharper it is the greater the objection, as more of the volatile and aromatic properties are liberated, and the normal medicinal principles destroyed. Millstones cannot be successfully used in pulverising medical drugs, and the argument applies with equal force to the grinding of wheat. The velocity of the running is greatest where it should be least, and the larger the millstones the more objectionable they are in this respect. At the same time very fine semolina is now made by millstones, but at too great a sacrifice, all things considered.

The objection to rollers that they cake the flour is due to mismanagement, and not to the principle of disgranulating by rolls. It is either due to feeding the rolls too thick, or to too few breaks. Something also may be due to an excess of moisture in the wheat and the excessive crushing of the bran, so as to remove the last particles of flour with the fatty or waxy matter which it contains, a very objectionable process on other grounds, as it also removes cerealin, maltin and other ferments. But the drying of wheat, the enlargement of rolls, the better separation of flour and offal between breaks, with a better knowledge of ferments and their action, and the increased value of the bran or offal for feeding stuffs for cattle are fast obviating objections of this kind.—*Millers' Gazette* (London.)

A Plan for Re-Bolting

Mr. Rathbun gives his plan for re-bolting in small mills as follows: "Before proceeding to notice the best arrangement of cloths and system for small mills, we wish to say that our plans and systems are elastic and not rigid; or, in other words, we adapt everything to circumstances, such as planning to use all the cloths we possibly can that are on hand and good, knowing as we do, that a great many different numbers can all be made to produce equally good results." He then gives plans for the different kinds of wheats, and recommends for winter wheat medium low grinding with a mill with one run of four-and a-half foot stones on wheat, grinding eight bushels an hour, one single reel twenty feet long and thirty-two inches in diameter, and running thirty revolutions per minute, no purifier. First, he recommends to put the reel on an eighth-of-an-inch pitch to the foot, and clothe it with two feet of No. 8, three feet of No. 9, five feet of No. 10, five feet of No. 11, three feet of No. 12, one and one-half feet of No. 6, and six inches of No. 2 cloth. The middlings or product of No. 6 cloth accumulate until there is enough to make a second grinding, and in grinding them do not grind too close or make too close a finish. When grinding wheat again, mix this flour in by means of a little feeder, so that it will go in the bolts with the wheat chop and bolt again. The product of No. 2 cloth accumulates with the tailings from the middlings and regrind for low grade, but do not work it into the first flour, as it will injure the quality, but the first middlings, if properly managed, will improve the first flour. Any method which tends to improve the flour should be followed, and if a more uniform flour can be made by rebolting than by bolting once, then we should rebolt.

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MILWAUKEE, APRIL, 1882.

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DURING the year ending June 30, 1881, $329,010 worth of bolting cloth were imported from Europe; also $1,072 worth of buhrstone in the rough.

DURING the fiscal year ending June 30, 1881, bags of foreign make, in which flour and grain were exported to the value of $162,212 were re-imported free of duty,

NEARLY seven million pounds of rice valued at $389,016 were imported during the last fiscal year. Our Southern rice planters should "brace up" and try and stop this leak.

THE total value of imports for the year ending January 31, 1882, was $681,691,921. The exports for the same were $824,177,326. The imports for similar period last year were of the value of $686,883,546 and exports $896,765,211.

WE have just received the very handsome catalogue of C. F. Miller, of Mansfield, O., a well-known mill furnisher. Mr. Miller is doing a large business, and is prepared to fill orders of any dimensions for anything in the mill furnishing line.

MR. CARMICHAEL, a member of the Wisconsin legislatnre, recently introduced a bill substituting a half bushel measure for the brass tester now in use by grain buyers. The bill was discussed at considerable length and was defeated by a vote of 38 ayes to 54 noes.

THE number of immigrants arriving in the United States during the year 1882 will doubtless greatly exceed in number any previous year. They are also, generally speaking, in better circumstances than those arriving heretofore. They bring good amounts of money with them wherewith to purchase the supplies necessary for opening farms and beginning life in America. The money they have brought has had a visible influence on Western trade already, and it is probable that it will be much more apparent as the season advances.

THE enormous quantity of $1,0^0,000 worth of blasting powder was used in Colorado during the past year.—*Min. and Sci. Press.*

A "blasted country" is the Centennial state.

THE total values of the exports of domestic breadstuffs from the United States during February last were $11,173,239, and during February, 1881, $13,919,046; for two months ended February 28, 1882, $23,150,760, and for two months ended February 28, 1881, $28,848,-452; for eight months ended February 28, 1882, $135,294,678, and for the same period the preceding year, $182,428,626.

THE recent floods which have overwhelmed the country tributary to the Mississippi river, will call the question of remedying the trouble anew to the minds of the hydraulic engineers of the world. This great section of the country so seriously involved is one of the most fertile regions in the world, and it must be reclaimed and protected at any cost. Doubtless there are engineers who can submit feasible plans that can be carried out for a sum of money not too great to be raised by a Nation like ours.

THE Garden City Mill Furnishing Co. of Chicago, Ill., have lately put in their factory new and improved machinery, thereby greatly reducing the cost of manufacturing the Garden City Purifiers. With their usual liberality, they have given millers the benefits of these improvements, and have greatly reduced the price of these machines. This will be good news to many millers who need a first-class purifier at a reasonable price. Read their advertisement and correspond with them.

WE have received from the Chicago & Northwestern Railway Co. a copy of a handsome little book entitled "My Rambles in the Enchanted Summer Land." It is designed for the use of summer tourists in the Great Northwest, and those intending to make a summer trip will certainly do well to read this little book carefully and make up their route from it. Boating and fishing facilities are good at all of the resorts along the line, and all who spend a few weeks amongst the woods and lakes of Wisconsin and Minnesota will never have cause, we think, to regret it.

DURING the month of February there arrived in the United States, 30,447 passengers —of whom 28,247 were immigrants, 1,631 citizens of the United States returned from abroad, and 569 aliens not intending to remain in the United States.

Of this total number of immigrants, there arrived from England and Wales, 3,037; Ireland, 1,464; Scotland, 501; Austria, 698; Belgium, 27; Denmark, 289; France, 275; Germany, 8,626; Hungary, 1,534; Italy, 1,777; Netherlands, 235; Norway, 193; Poland, 353; Russia, 1,052; Sweden, 431; Switzerland, 431; Dominion of Canada, 3,771; China, 3,389; and from all other countries, 164.

Oatmeal Milling Overdone.

A well-known oatmeal miller says that oatmeal milling is entirely overdone in this country. Americans do not take very kindly to oatmeal as a regular thing—they look at it as a sort of medicine—a good thing for babies aud sick folks. The oatmeal export trade has not been profitable during the past two years. The increased exports of good wheat flour to Scotland, where more oatmeal is used than anywhere else, is reducing the consumption of oatmeal in that country. Choice brands from a few well-known mills only command a fair paying price.

Mechanical Schools.

THE days of master and apprentice in America may be said to have gone by. Public schools for the free education of our rising generation in the ordinary fundamental branches of learning are universal. Laws have even been enacted in several states already, compelling parents and guardians to send their children or wards to school while they are at certain ages. These laws, we are sorry to state, are not energetically enforced, and in many instances are doubtless violated with impunity. There is an opportunity, however, for all to obtain a respectable education at little cost, if so disposed. But there is a lack of facilities for teaching our young, useful trades by which to earn a respectable livelihood when they are grown. This deficiency has already been a subject of grave consideration by some of the best minds in our country, and in some of the eastern cities technical schools have been established within the past few years, which have been more or less successful. It has mattered little where these efforts to inculcate mechanical education have been made, the projectors have always had more applicants for their benefits than they were able to receive. This shows that there is a universal demand for schools in which the American youth can be taught useful trades. It is too much to expect that the graduates of one of these schools, after a course of a year or two, should be first-class journeymen, but it is certain that they have gained the fundamental principles of their trades and will soon become first-class journeymen if they are possessed of a reasonable amount of tact and common sense. Too many of our intelligent youths are seeking to earn a livelihood in the professions, which they are wrongly taught to believe are more *high-toned* than other pursuits; but to our mind there is none more high-toned than the liberally educated and skillful mechanic. He is able to use both brains and body for the benefit of himself and his fellow-man. We shall watch with interest all efforts to establish technical schools or to improve the course of instruction therein.

The idea of establishing a school for the education of young millers has long been agitated, and the day will certainly come when there will be such an institution in this country. There are several institutions of the kind now in operation in Germany and Austria, and one, we believe, in France.

The changes in our methods of milling have been great during the last generation, and it has been ascertained that many of the old line of journeymen millers are sadly out of place in a modern mill. Our young men must be taught by those capable of teaching, to become the millers to operate the mills of the future when the advanced millers of the present are gone.

That Germ Question.

THE British millers are now enjoying a controversy over Thomas Muir's patented method of removing germ from grain and making germless flour. In a letter recently written by Muir, in speaking of the late George Motley's American patent, he says it is no anticipation of his patent, though it may be to Hay's (English) patent. He says: "It is one of the many devices for eliminating the germ, referred to in my specification as not effective; the result was obtained at too great cost. I tried it and found it both ineffective and costly."

Mr. Muir has so far not succeeded in obtaining a settlement with the British Millers' Association, but many outside of the Association are said to be compromising.

Getting up Steam.

BY F. B. ALLEN.

The records of boiler explosions demonstrate unmistakably the importance to the steam user of the most careful supervision over boilers at the time of getting up steam. Some of the most destructive explosions of which I have any knowledge occurred either on Monday morning, or at the time of getting up steam after the boilers had been out of service; while cases in which plates are bulged, furnaces distorted, and flues and tubes badly injured, are of quite frequent occurrence, all due to ignorance and carelessness, or both, in getting up steam, or neglect of necessary precautions in filling boilers; or, having filled them, a failure to detect leaky gaskets, imperfectly closed blow-off valves, or cocks that had permitted the escape of the water before fires were lighted.

In filling boilers, I have found it a good plan to raise the safety-valve and block it open: this will permit the escape of air, besides indicating the time boilers begin to steam, after which the valve may be lowered. I have observed most stationary engineers, in chargeing furnaces, put the kindling-wood on the grate-bars. Another and I think a better plan is, to first scatter a thin layer of coal all over the bars—atop that the wood is placed; the latter plan, if tried, will be found a more economical and expeditious way in obtaining a good bright steaming fire.

The masonry or setting of externally fired boilers now almost universally employed in our larger cities where aqueduct water is used, is frequently ruined by heavy forced firing, when steam is first got up; the cement and mortar, instead of being allowed to set properly as they would do if slowly and judiciously heated, speedily crumble away, losing the strength of the joint; the brick wall cracks open, the draught is impaired, heat lost, and perhaps the girth seams of the boilers strained by the unequal settling of the walls. In a few months, it is necessary to reset the boilers again, for which the innocent mason may be cursed loud and deep, the engineer in all probability being his chief accuser.

Forced firing is not only injurious to the setting, but to the boiler as well. This is most apparent in the use of the common upright or vertical tubular boiler, in which the water is carried some distance below top of tubes; the tube-heads soon begin to leak, and require frequent expanding in order to keep them tight. It will be found a good plan, when troubled in this way, to have defective tubes ferruled. Horizontal tubular boilers are often set to return heat over the top of shell; the disadvantage of this plan of setting is the danger of the exposed shell above water-line being injured in getting up steam from cold water. The shorter the boiler, the greater the danger of injury; the lower part of the boiler being at a temperature due to that of the contained water, while the upper part is exposed to that of the escaping products of combustion. A recent experience was that of three boilers 42 inches by 10 feet, used for heating purposes only, at a pressure never exceeding 25 pouuds. Yet under these favorable circumstances, they were ruined in about five years. More or less trouble had been experienced during the preceding season from leaks above the water-line. On examination, it was found that the upper half of the shell was badly cracked in several places; and when it was attempted to cut out the defective sheets, the surrounding metal was found so brittle and badly crystallized that the boilers were condemned. The shells below water-line had never given any trouble and appeared to have suffered no injury during their brief service. There can be no doubt, I think, that their failure was due to the plan of setting; for they were built of selected iron, by one of our best boiler-makers, and while in service were under the care of a first-class engineer. Under less favorable circumstances, their failure would have occurred sooner. Fractures in the sheets of boilers set in this way are of common occurrence, the danger increasing with the frequency of getting up steam.

In some parts of the country, local ordinances for smoke prevention are now in force, and many worthless smoke-burning appliances (so-called have been sold to steam users in those localities. A roomy furnace, ample combustion-chamber, and a clean, bright, even fire, not exceeding eight inches thick, with systematic firing, will be found helpful in lessening the smoke nuisance. When there is more than one furnace, the firing and cleaning must be alternated, the fireman having his fire tools within reaching distance, and damper closed before he opens the furnace door, which must be closed again as quickly as possible.

There are two principal methods of firing, known to the initiated as "spread-firing" and "side-firing." Each has its advocates, who are convinced theirs is the only plan. I have practiced both, and, so far as I could tell, with about equal results; am inclined to attach greater importance to having an experienced fireman, careful attention, regularity of firing, and rapidity of movement than to any prescribed form of covering the fire, which must of necessity vary in different localities, according to the quality of the fuel. But a careful attention to the details enumerated will result in economical consumption of fuel, lessening of smoke, and greatly increased efficiency of the boilers whenever practiced. —*Locomotive.*

JOHN R. SCHALL now owns the largest mill in Lehigh County, Pa. It is at Laury's Station, has a capacity of 150 barrels per day and is fitted up with the Stevens roller mills. The machinery was furnished by the Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

MESSRS. N. S. GREENE & SON, of Milford, Wis., have at last effected a compromise with the farmers, of the troubles arising from overflowage caused by their dam. The terms of the compromise are as follows: From the breaking up of the ice in the spring until Sept. 15, each year, flush boards limited to 6 inches and for the balance of the year 8 inches in height. The space for the escape of water over the dam is lengthened to 35 feet more than when suits were commenced. Cost in suit tried in the Circuit Court at Madisnn, waived, and each party to pay their own costs on all suits tried and untried. The farmers waive all claims of damages for flowage as long as the dam is maintained in said condition with flush boards as above stated.

The Odell Roller Mill.

We present herewith to our readers an illustration representing the Odell Roller Mill. It is the invention of Mr. U. H. Odell, a milling engineer and mill builder of long experience and one whose work is spoken of in the highest terms in various parts of the country. This roller mill which has met with a flattering reception since its introduction to the general market a few months ago is manufactured by THE STILWELL & BIERCE MANUFACTURING CO. of Dayton, O., who have been so long and favorably known to the public as manufacturers of turbine water wheels, feed water heaters and filters, etc.

Our illustration represents the double machine. The machine contains two pairs of 9 inch by 18 inch chilled iron rolls, either corrugated or smooth, and is driven by belts. The entire machine is easily accessible in all its parts, occupies but little floor space, and can readily be taken apart, if necessary for convenience in locating it in the mill. For each double mill two driving-belts from a power-shaft are employed. The open belt on the front side of the machine drives the two fast-speeded rolls. The other a cross-belt (crossed below the floor), at the opposite side of the machine, drives two slow-speeded rolls. This driving arrangement permits the use of long belts over large pulleys, securing a positive differential speed, and obviating the slipping of belts and heating of journal-bearings. All the pulleys are hung close up to the journal-bearings.

The tightener devices, which are alike on both sides of the machine, consist of a tightener pulley, running in an oscillating frame, which is fastened to the roller mill by a stud. On the back of each of these tightener frames is fastened the segment of a gear-wheel, and the same are actuated by means of pinions fastened to each end of a shaft running through the machine, on one end of which is fastened a hand-wheel. These tightener pulleys, with the devices for operating them, perform the double office of giving proper tension to the driving-belts for starting and operating the roller mill, and also for instantly stopping the same without the necessity of throwing off a driving-belt.

Provision is made for reversing the position of tightener devices, by which means the same roller mill can be made either right-hand or left-hand, which convenience is sometimes of great value in meeting the conditions in old mills. Another convenience and safeguard consists in being able by one movement of a hand-lever to simultaneously throw both movable rolls apart from the stationary rolls and at the same time shut off the feed. This is accomplished by means of the hand-lever. Pulling this lever towards you, spreads apart the rolls and shuts off the feed; and pushing it back again restores the rolls to their original position, without disturbing any of the adjustments, and turns on the feed. The two inside rolls run in stationary boxes, which are bolted securely to the frame and always remain in perfect line. The two outside rolls run in boxes which are bolted to the swinging arms, which admit of both vertical and horizontal adjustment.

These adjustments are accomplished as follows: The vertical adjustment is obtained by means of the lever eccentrics, by which the swinging arms can be raised or lowered at pleasure. The horizontal adjustment is obtained by means of the rods, one end of which is fastened to the link, the other end to the barrel, which contains the tension spring, as clearly shown in cut. By turning the hand-wheel, the distance between the rolls can be varied at will; and having obtained the desired set, it is retained by means of the lock-nut. Any desired tension of the spring in barrel can be obtained and is not affected by the subsequent adjustment of the rolls. These springs allow the rolls to yield apart and permit the passage of any hard substance without injury to them.

Solidity of construction has not been lost sight of, and the adjustments, peculiar to this machine, have attracted much attention, and, by those familiar with them, are very highly spoken of. Those desiring information, fuller than that here presented, can readily obtain it by writing to the manufacturers, STILWELL & BIERCE MANUFACTURING COMPANY, Dayton, Ohio.

R. G. SHULER & Co. of Minneapolis, Minn. have just taken contracts for building a 200 barrel roller-mill for Michael Simmers at New Prague, Minn.; also one for J. S. Lord, at Ogden, Ia., and a 150 barrel roller-mill for Gravel & Goulet at Gravelville, Minn.

[Translated from *Die Muehle* for the UNITED STATES MILLER.]

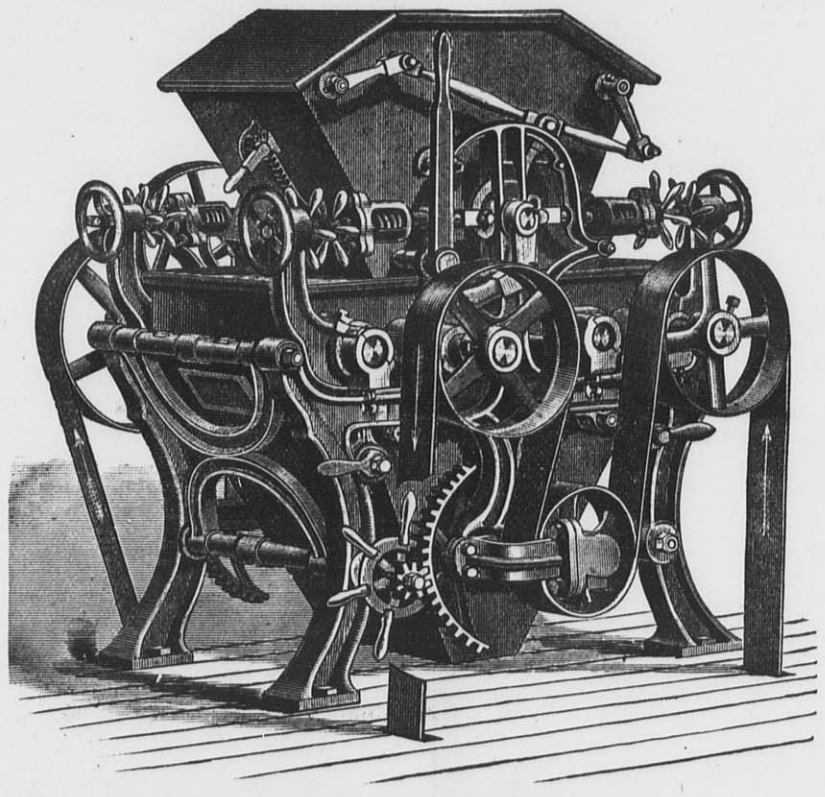
About Roller Milling.

BY DR. H. SELLNICK.

As has been already repeatedly explained the employment of one or another kind of rolls in milling depends eminently on the material to be ground and the result desired to be obtained. Rolls are not universally adapted to the grinding of the most heterogeneous millstuffs, which can be ground with equally good results on millstones, provided their dress is made to suit the circumstances. Rolls are constructed to do specific work; their grinding surfaces are finished for a specific purpose by the manufacturer; the miller cannot change the nature of the surface; cannot make it smooth or dull for one day and corrugated or sharp for another to conform to the quality of millstuffs he desires to grind.

Rolls can only serve the purpose for which they are intended by the manufacturer and must be criticized only from this point of view. Comparisons of roller machines ought to be made with the idea in view that the manufacturer is only responsible for the results when performing the specific work for which they were built and not from the results obtained by the miller when working the machine on millstuffs on which it was not designed to work.

Porcelain rolls are intended principally to grind middlings, making therefrom the finest flour. It is therefore not quite plain, how, in an article entitled "Smooth Rolls" (translated from *Die Muehle* and published in a recent number of THE UNITED STATES MILLER



THE ODELL FOUR-ROLLER MILL

as a report on Russian Milling) a comparison of the work of porcelain and iron rolls could be drawn, provided, as the authors of the article distinctly emphasized only *coarse* flour or rather fine dust middling ("groats") were to be produced.

Feeling not at all inclined to criticize the singular and personal ideas developed by these authors, I desire to contribute something tending to refute such erroneous views as appear to me to still exist. It has never been denied that smooth rolls, either porcelain or iron were capable of grinding or rather pulverizing up to a certain degree of fineness, provided that the condition of the grain is such as to readily allow a bursting apart by pressure. This degree of fineness however does not reach further than to that state of granulation which millers call fine dust middlings (groats) and in case of soft wheat that points even can not be reached. The most difficult service desired to be effected by rolls was to grind not only hard dust middlings but also soft middlings, without the aid of further appliances, as fine as millstones could do, and thereby enjoy all the advantages universally accredited to rolls. This could only be accomplished by an action on the middlings which first, pressed gently; second, rubs apart carefully, and third, allows the product to pass off organically sound.

Wegmann determined to solve this problem. He has succeeded by the invention and introduction of his porcelain rolls, undeterred by the many difficulties of construction, by the shrewdness of competitors or advocates of iron rolls. His porcelain roller mills with differential speed of roll surfaces are meeting the above-named three requirements entirely and satisfactorily. He who thinks himself justified in ignoring or even disputing the value of these machines, their work, their construction and durability only furnishes proof that he is unconscious of the latest aim of modern milling and the means of accomplishing it.

To press gently, it is necessary to employ such means of pressure as are sufficient to hold the rolls together so elastically that the limit of elasticity of the material being ground is not greatly exceeded. This is accomplished by the double spring pressures so characteristic in Wegmann's rolls. These double springs not only hold the rolls to their work but also (by a late invention of Mr. Wegmann's) are the means of throwing the rolls apart automatically in case the feed should stop.

To rub apart carefully, it is at first necessary to rub between two surfaces, which must not be mis-understood as the *friction* of one surface on the other. For this rubbing apart, it is necessary that the surfaces shall grip the object to be reduced in size to the required degree of fineness, and hold it to let it receive the rubbing movement of the frictional surfaces—an utter impossibility between absolutely *smooth* surfaces. The *ground biscuit-porcelain* however has solved the problem for such a length of time and with such perfection as cannot be paralleled by any other material. The rubbing apart is done carefully, because even though the surfaces travel *fast*, the real rubbing and pulverization takes place rather slowly. It is entirely different from the rubbing action between two millstones. The uniform slow rubbing action of the Wegmann differentially speeded rolls could nearly be effected between two millstones if both stones revolved in the same direction, one moving a little faster than its mate, but the differential motion of a pair of porcelain rolls has not by far the tearing, atomizing action afforded by the surfaces of a pair of millstones and the representation of equality of the work of millstones and porcelain rolls attempted by the Russian authors referred to is entirely "*en vogue*." The "grip", or gritty texture of porcelain rolls assisted by the differential motion and gentle pressure—in using the Wegmann rolls—affords a carefu rubbing apart of the middlings—so much so, that bran and germ particles remain unreduced and will respectively be flattened, while the flour particles are reduced very evenly to sharp flour.

Rolls, smoother than porcelain—this includes all metal rolls—can only produce a rubbing action by differential motion under increased pressure—that is at the expense of the gentleness of pressure,—thereby having the tendency to *squeeze*, which means to overcome the limit of elasticity of the middlings by far, so that not only the cohesion of the flour particles in the natural middlings—is annihilated but also these flour particles are stuck together, that is "caked." If this result is prevented, less fine flour can be obtained, and more coarse flour or rather fine dust-middlings ("groats")—which are called for in Russia. Coarse flour can also be made on porcelain rolls provided they are set and run properly which is necessary with any roller mill. It is not necessary to work with a differential motion. If "rubbing apart" is

[*Continued on page* 92]

UNITED STATES MILLER.

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MILWAUKEE, APRIL, 1882.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers*

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY for 1882, was completed, ready for delivery February 1, 1882.

It shows that there are in the United States 21,346 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234, California, 209; Colorado, 52; Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363, Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri; 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennesee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia, 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances This work is indispensible to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

A Word To Our Patrons.

This number closes the twelfth volume of the UNITED STATES MILLER. We take this occasion to thank our friends for their patronage and good wishes. We have striven to make the UNITED STATES MILLER valuable to the trade and *know* that we have succeeded. We have no space to spare in which to publish the many complimentary testimonials we have from time to time received, neither do we think it necessary or appropriate. We shall endeavor to make the UNITED STATES MILLER even more useful in the future to our readers than it has been in the past.

JOHN M. STOWELL, Esq. of the Cream City Iron Works, a well-known manufacturer of flour-milling machinery, engines, etc., is the nominee of the Democrats and the Trades Union parties for Mayor of Milwaukee. His election is considered certain.

MESSRS. Miller, Bros. and Mitchell, mill furnishers in Montreal, Canada, report business quite active in their line. Canadian millers find it greatly to their advantage to be able to secure all kinds of American flour-milling machinery without going outside of the Dominion.

GLUCOSE MANUFACTURE.—Some points in the growth of this important industry were brought out before the Committee of Ways and Means in testimony referring to the proposed tax on its production. It appears that $20,000,000 capital is invested in the manufacture in this country, 50,000 people employed, and last year 20,000,000 bushels of corn were used.

AN ELECTRIC PILE-DRIVER.—At Hatfield Park, England, the piles to support a coffer-dam across the River Lea have just been successfully driven by the power from a water-wheel situated at a distance, which power was transmitted by two dynamo-machines and a couple of wires to the gearing connected with a pile-driver of ordinary construction, erected on a barge floating in the river. The machinery, although rather roughly constructed, worked well, lifting a dolly weighing from four to five hundredweight with ease and regularity.

MR. RICHARD GETHIN, superintendent of the millwright work on the new roller mills at Marshall, Mich., made us a brief call. He reports the new mill as doing excellent work.

ALBERT HOPPIN Esq., now a private citizen residing at La Crosse, Wis., was in the city during the month with his wife, visiting their numerous friends. Mr. Hoppin, we understand, will soon embark in the manufacturing business at La Crosse.

MARCH 25, L. Schoenthal's store-room in New York City, in which was stored over $6,000 worth of Passover bread, intended for the use of the Hebrew citizens of New York during the coming Passover, was destroyed by fire. The price of "hard-tack" has advanced in New York.

SEED WHEAT.—Too much care cannot be taken in securing good seed wheat. In the first place, every foreign weed seed and every kernel of oats, rye, barley, broken wheat, etc. should be removed by machinery such as can be found in every well regulated flour-mill; and then, if possible, the wheat should be graded in regard to size and none used for seed except large, full and plump kernels. Mill-owners all over the country will consult their own interests by talking this idea into the farmers. The result will be a large harvest of good wheat. Farmers in the Northwest should be urged to sow nothing but the hard varieties of wheat, as on hard wheat depends the excellent reputation of the flour produced in the great mills of the Northwest, which has enabled the millers to pay to the farmers in the Northwest a price for their wheat which was in former years deemed to be impossible.

New System of Grain Transfer at Chicago.

The Chicago & Western Indiana Railroad Company are developing at the South Englewood suburb of Chicago a new plan for transferring grain from the Western to the Eastern roads. An immense transfer house, one thousand feet long, is to be built. The loaded cars from the West will be run into the house on a track twenty-three feet above the ground; and then with elevator shovels the grain will be unloaded into hopper scales holding a car load each, thus accurately ascertaining the weight of each car load. The grain will then be spouted into an Eastern car standing on the track below. The grain will be inspected at the yards, and the loaded Eastern cars made up into traius and started Eastward. The transfer thus made is quick and cheap, and the weighing accurate. The new house is expected to have the capacity of transferring five hundred car loads per day.

Grinding Damp Wheat.

One of our Oregon subscribers sends us the following questions.

What change is required in dressing a millstone for dry and wet or damp wheat? Would widening the furrows be better for damp wheat, or sharpening the furrows and cutting the surface of the stone away so as to leave the grinding surface nearer the outer skirts of the stones? The wheat is damp in in Oregon, and I hear complaints of flour making sticky bread.

ANSWER. The leading idea in grinding damp wheat is to grind it on sharp grinding implements, preventing the heating or even the warming of the meal. Best adapted for damp wheat are corrugated rolls with sharp corrugations. They grind cool, for the meal is held but a very short time between the rolls; it is not dragged for any distance, not more perhaps than one half of an inch. If you want to grind such damp wheat with stones, you must employ a pair of sharp, open stones, and not run them too fast. If they are four feet in diameter do not run them faster than 120 revolutions per minute and feed very moderately. Provide such stones with much draft, so they "*throw out*" readily. The stones must be cut away in the bosom considerably, *i.e.*, a 4-feet stone ought to do all the grinding within six inches of its circumference. The sharper the stone the cooler it will grind. The slower a stone runs (of course, fast enough to keep steady when working) the less it will heat. The less land the stone has the less chance the meal has to be dragged along and get warm. It is proven that the starch of wheat when damp and warm changes partly into dissoluble glucose and dextrinose—both, sweetish and sticky, and products of fermentation. They will impair the baking qualities, and such flour will keep on fermenting continually and spoil,—get sour, It is a bad practice to grind damp wheat, and no one's flour-mill will gain any reputation by it.

Why do you not dry the wheat? Steam-drying apparatus would help you indeed. Heaters, through which steam and heat are passing entirely independent of each other without contact, would be very advisable to use in your case. I thought your wheat was far from being naturally damp; and should you have reference to *dampened* wheat, this also should be re-dried before grinding. Should you want to grind your damp wheat on the stones dressed now for dry wheat, cut away the face of stone in center sloping up to land about six to seven inches inside of skirt. I would also widen the furrows a little and make them deeper towards the eye, then keep the lands sharp. Furrows ought to be smooth. All this is necessary to enable stones to throw out well by slower speed, as the draft of the stones cannot be changed so easily.

Recent Milling Patents.

FEBRUARY 21, 1882.

Grain-tally, James Griffith, Flint River Township, Des Moines County, Ia.

Process of, and machinery for gradual reduction of grain from flour to middlings, Noah W. Holt, Buffalo, N. Y.

Alarm for mill-stones, William Lauhoff, Detroit, Mich.

Roller for gradual reduction flour-mills, William M. Mills, Dayton, O.

Middlings purifier, Thomas B. Osborne New Haven, Ct. (Two patents.)

Roller-mill, Henry N. Pomeroy and C. E. Ball, Madison, Wis.

Feed-water heater, Edwin Reynolds, Milwaukee, Wis.

FEBRUARY 28, 1882.

Combined flour and meal-sifter, Napoleon Du Brul, Cincinnati, O.

MARCH 7, 1882.

Middlings purifier, P. S. Brown, Guthriesville, Pa.

Grain-mill, Louis Hottmann, Grünbach, Würtemberg, Germany.

Hominy-mill (re-issue), Theodore Hudnutt, Terre Haute, Ind.

Machine for separating middlings, William R. Middleton, Commonwealth, Wis., assignor to Messrs. Huntley, Holcombe & Heine, Silver Creek, N. Y.

Grain-cleaner, J. M. Shackelford and J. W. K. McClure, Blue Mound, Ill.

Manufacturing whole wheat flour and bran flouring-machine. } Wallace Warren and F. C. Taylor, Chicago, Ill.

MARCH 14, 1882.

Grain drying machine, John Barclay, Toronto, Ontario, Canada.

Grain-measure and tally, Thomas F. Dodge, Lawton, Mich.

Machine for splitting grain, grinding-mill, and mill disk, } Louis Gathmann, Chicago, Ill.

Wheat-feeder, Frank J. Grow, Alpha, Ind.

Grain-drier, Henry R. Heffner, Circleville, Ohio.

Grain reducing-machine, John Hollingsworth, New York, N. Y.

Grain cleaner, John Russell, Berlin, Pa. (Two patents.)

Barley bearding-machine, James Sendall and D. Richards, Brockport, N. Y.

Middlings purifier, Andrew J. Seyler, Cedarville, Ill.

MARCH 21, 1882.

Grain drier—James H. Catron, Nebraska City, Neb.

Manufacture of flour—Robert L. Downton, St. Louis. Mo.

Oatmeal machine—Anton Heinz, Muscatine, Ia.

Grinding mill—Johann Matzner, Mount Pleasant, D. C.

Rice cleaning and scouring machine—David L. Shoemaker, Washington, D. C.

Grain drying apparatus—Frederick W. Weisebrock, New York, N. Y.

THE new 200 barrel roller-mill built by Edward P. Allis & Co. at Marshall, Mich., is now complete. It uses the Gray rollers and works on soft wheat. The mill-wright work was superintended by Mr. Richard Gethin. The mill contains 6 sets break rolls, 2 sets smooth iron rolls, 7 sets porcelain rolls, 15, 16-feet silk-reel and 8, 7-feet break-reels, 5 middlings purifiers, 6 break purifiers, 12 Kick dust-catchers, Throop's centrifugal flour-dressing machine, Richmond grain-cleaning machinery, and Throops' brushes and everything else needful for a complete mill. Adjoining the mill is a 45,000 bushel grain elevator, fitted up in the most approved manner for holding grain for the use of the mill

Bad Tasting Bread.

A sample of bread having a disagreeable taste was brought to Mr. C. Bernbeck according to the "*Pharmaceutische Zeitung*" for analyzation.

It contained:

Water, 42.8; ashes. 0.632; salt, 0.78; dextrine, 16.8; glucose, 4.2; proteine substances and starch, 34.788; total, 100.00.

The sweetish taste is caused by the exceedingly high percentage of glucose.

The flour was also analyzed and a great percentage of dextrine and glucose was found. Thus the idea of adulteration by corn-flour was discarded and it was assumed that the starch of the wheat had become transformed chemically on account of the extreme dampness of the wheat. It was cut in the fall of 1880 which as will be remembered, was a very wet season.

State of the Hungarian Flour Trade.

The Vienna *Walzenmueller* in a recent issue, had a long and doleful article on the situation of the Pesth steam flour mills, which it says got a great deal worse during the year just closed in consequence of American competition, which has ousted Hungarian flour from markets considered under its absolute sway. Then there was the difficulty about procuring the precise grades of wheat required, the home crop not furnishing, them on reasonable terms. The Pesth mills made strenuous efforts to maintain their position, but in this they failed. They consequently applied to the government for assistance, placing before it the actual facts of the case. The only thing the Hungarian government was able to do in the way of aid was the lowering of railroad freight rates, but even this help has in reality not met the case fully. In this manner most of the Pesth mills have throughout 1881 worked at a loss, and not more than two of them are in a position to declare a dividend. Last year was one of the worst the Pesth milling industry had ever had to toil through. Not only has the field in which sales could be effected been lessened in extent, but the sales made did not on any average cover cost; the German frontier has been sealed against Huugarian flour.

New Publications.

COMMERCE AND NAVIGATION OF THE UNITED STATES, from the Treasury Department of the United States, Washington, D. C.

HARPER'S MAGAZINE for April, 1882. Published by Harper & Brothers, N. Y. Subscription price $4.00 per year.

Harper's Magazine for April is excellent, as usual. Among the articles of especial interest we will mention the few following: "Spanish Vistas," by George P. Lathrop (illustrated); "What we Owe to Trees," by N. H. Egleston; "Silver San Juan," by Ernest Ingersoll (ill.); "History of Wood Engraving," by G. E. Woodberry (ill.); "Mr. Gladstone at Hawarden," by H. W. Lucy (Ill.) This number contains also a number of acceptable poems, and many other entertaining features.

THE CENTURY MAGAZINE. The Century Co., New York, Publishers. Subscription price, $4.00 per year.

Tha Century for April is at hand, full of entertaining illustrations and instructive articles, which will be perused with pleasure by thousands of intelligent Americans. The frontispiece is a full-page portrait of Mathew Arnold. We note the following articles deserving of especial attention: "Tunis and its Bey" (illustrated), by Ernst von Hess-Wartegg; "Through one Administration," by Francis Burnett; "Opera in New York (ill.), by Richard Grant White; "Some American Tiles (ill.), by Frank D. Millett; "Russian Jews and Gentiles," by Mme. Z. Ragozia; "Was Lord Beaconsfield a Representative Jew?" by Emma Lazarus.

ST. NICHOLAS FOR APRIL. Published by the Century Co., New York. Subscription price, $4.00.

This opens with a charming frontispiece picture by Rosina Emmet, illustrating a timely little poem by Mary Mapes Dodge, entitled "An April Girl." "Brigham, the Cave-dog," is an account of a clever animal that was lost in the Mammoth Cave of Kentucky, but found his way out after wandering for thirty-six hours among a maze of pitfalls and dark windings. Mrs. Abby Morton Diss contributes "The Story of Wangse Pah and The White Elephant," an illustrated sketch of Siamese life. "Lord Malapert of Moonshine Castle" is a bright comedy for children, by E. S. Brooks. It is easy to learn, not difficult to get up, does not require many speaking characters, and bids fair to be popular with our younger Thespians. The veracious legend of "Mr, Weathercock" is given by "Aun Fanny" Barrow. Walter Satterlee has drawn four page-illustrations for some æsthetical stanzas, called "Laments of the "Cat-tail,"

Dr. Eggleston's serial, "The Hoosier School-boy," and the "Recollections of a Drummer-boy," by Harry M. Kieffer, are brought, all too soon, to their conclusions, in stirring and spirited instalment; and "Donald and Dorothy" have a grand good time in their "House Picnic." The illustrated "Northern Myth" stories are continued with the legend of "The Hoard of the Swarthy Elves,"

Latest Improved Grain Cleaning Machinery.

Milwaukee manufacturers of milling machinery have established a very high reputation for the excellence of their product throughout the civilized world. They have the advantage of having the best of materials from which to construct machines and first class careful workmen to build them. We have the pleasure of presenting to our readers herewith two illustrations of machines of great value to the miller which we believe have well nigh reached the point of perfection. These machines are a combination of cockle separator and oat separator and as built the combined machine which answers the double purpose of removing cockle and other weed-seeds, and also of eliminating oats, sticks, white caps, straws, chess, chaff, dust and dry wild garlic. It does all this without wasting the wheat upon which it operates. The first illustration represents a double suction machine, the first suction acting upon the wheat as it enters the machine and the second as it is leaving it, removing from it all the foreign matter rubbed off the kernels of wheat by the scouring process of passing through the cylinder. Each of these suctions is entirely independent of the other and can be quickly and easily regulated. The second illustration shows a single suction machine. The machines are constructed in accordance with the best known rules of mechanics. They are all fitted with double sets of closed eccentrics, which give an equal motion both ways, thus overcoming all shaking and straining of the frame. One set of eccentrics shakes the sieve riddle and the other shakes the feed and discharging spouts. The feed hopper is provided with a feed roll which prevents all clogging. The machines are kept in stock in five numbers, viz: Nos. 00, 0, 1, 2, 3, No. 3 being the smallest and having a capacity of 15 to 20 bushels per hour, while No. 00 has a capacity of 110 to 125 bushels per hour. A No. 3 machine when set up ready for operation occupies a space 8 feet 6 in. high, 8 ft. 1 in. long and 4 ft. 6 in. wide. A No. 00 machine occupies a floor space of 12 ft. 3 in. by 7 feet and is 11 feet high.

Many machines have been built to order with more cylinders and having a much greater capacity. These machines have been introduced in almost every country during the last six years and give universal satisfaction. Millers who have not yet used these machines or who are now building will do well to address the manufacturers for their latest catalogues showing all sizes and styles. Their address is "The Cockle Separator Manufacturing Co., Milwaukee, Wis., U. S. A.

Why Purifiers Do Not Work.

BY J. H. REDFIELD, SALEM, INDIANA.

While the method of construction, and principles of operations, of some purifiers render them easier to understand, and give them greater capacity for work than others; yet, it sometimes happens that the best of them are condemned by the millers who have not given proper thought to what is required to obtain from their use, satisfactory results; and, although the instances of condemnation are yearly lessening in numbers, still it will not be out of place to enumerate some of the cases which, in the past, have led to the substitution of a very much inferior machine for one, which, had its requirements been properly studied, would have given very much more valuable results to the miller. In the first place, it will be well to bear in mind that a middlings purifier is designed to purify or cleanse *middlings*, not flour, and material which passes through No. 12 Cloth, is by the majority of millers, considered flour (although we have seen millers occasionally, who claimed it as middlings), and probably the appearance of this material, mixed up with the middlings as they are spouted to the purifier, has occasioned more trouble than any other one cause. If middlings mixed with flour are passed to the purifier, it matters not what purifier is used the inevitable result is a waste in the dust room, and the fault is, of course, attributed to the machine; again, should this flour be a little damp it will adhere to the cloth, choke or fill up the meshes, and render it impossible for the machine to produce satisfactory results

It is essential then that this flour should be wholly taken out before the material goes to the purifier; in fact, if it is desirous to save it it must be taken out before, *therefore, thoroughly dust your middlings before attempting to purify them.*

In the third place, the manner of grinding has much to do with the operation of the purifier.

When the buhrs are roughly and carelessly dressed, the middlings are rough, jagged, uneven, and of all imaginable shapes and to many of them particles of bran adhere, which, of course, the purifier cannot remove, and after purification they present a specky appearance, and this, in too many instances, is said to be the fault of the purifier, but if the miller will take the trouble to examine with a glass, he will find that the fault is altogether in his method of grinding, and not in the purifier.

And again, where millstones are run at too high speed, or where there is too much land surface, or not draft enough, with either of these defects the middlings will be fine, soft and have a "red-dog" appearance. The germ will be cut up and mixed with the product so that it will be impossible for any purifier to wholly remove it.

To produce good middlings, millstones should run slow; furrows should be broad, flat, and with a smooth feather edge; land surface should be less than furrow surface, say, $\frac{1}{3}$ land to $\frac{2}{3}$ furrow surface; stones should be bosomed slightly from the eye half way out to skirt. In dressing care should be taken not to break the surface up with dull pick, diamond cut is the best crack, unless done by an experienced stoneman. Stone should have a true running balance. Follow these hints and you will make good middlings.

While it is impossible to make middlings of the same size, it is possible to have them all of the same quality.

These remarks are not designed for those who "know all about it," but rather for those who may be contemplating the purchase of a purifier, and in order to assist them in obtaining benefit from their use, without the vexation and annoyance which has sometimes attended others by reason of inattention to those essential requirements.

The demand for purifiers is not by any means yet filled, but that is no reason why every purchaser hereafter should, by experience, learn the necessity for carefully following the foregoing requisites to satisfactory results; for, experience is a dear teacher, and if we can forego the expensive luxuries of employing her, it is well to do so.

Not only will the miller be benefited by conforming to these necessary requirements but the manufacturer will also be saved much trouble and perplexity, and oftentimes needless expense, because, if he has five hundred machines sold, which are giving satisfaction, it is fair to presume that the one he sells you should do the same, but if it does not, he first thinks the fault *may* be in the machine, and off he sends a man, one, two, yes, sometimes five hundred miles to remedy the difficulty, (because, if he does not, you may throw his machine out and thereby greatly injure his reputation and business) only to find that the fault is not in the machine, but in the miller. Well, how do you suppose the manufacturer feels under the circumstances? It can be better imagined than described.

You want the best machine you can obtain, and the manufacturer wants to supply you with the best he can produce, and it is but justice to him, as for your own pecuniary interest, that you should religiously follow all instructions he gives you to obtain the best results from the use of his machine. The entire object of the miller is the attainment of results, and the entire object of the manufacturer is to provide machinery which shall facilitate or economize their attainment.

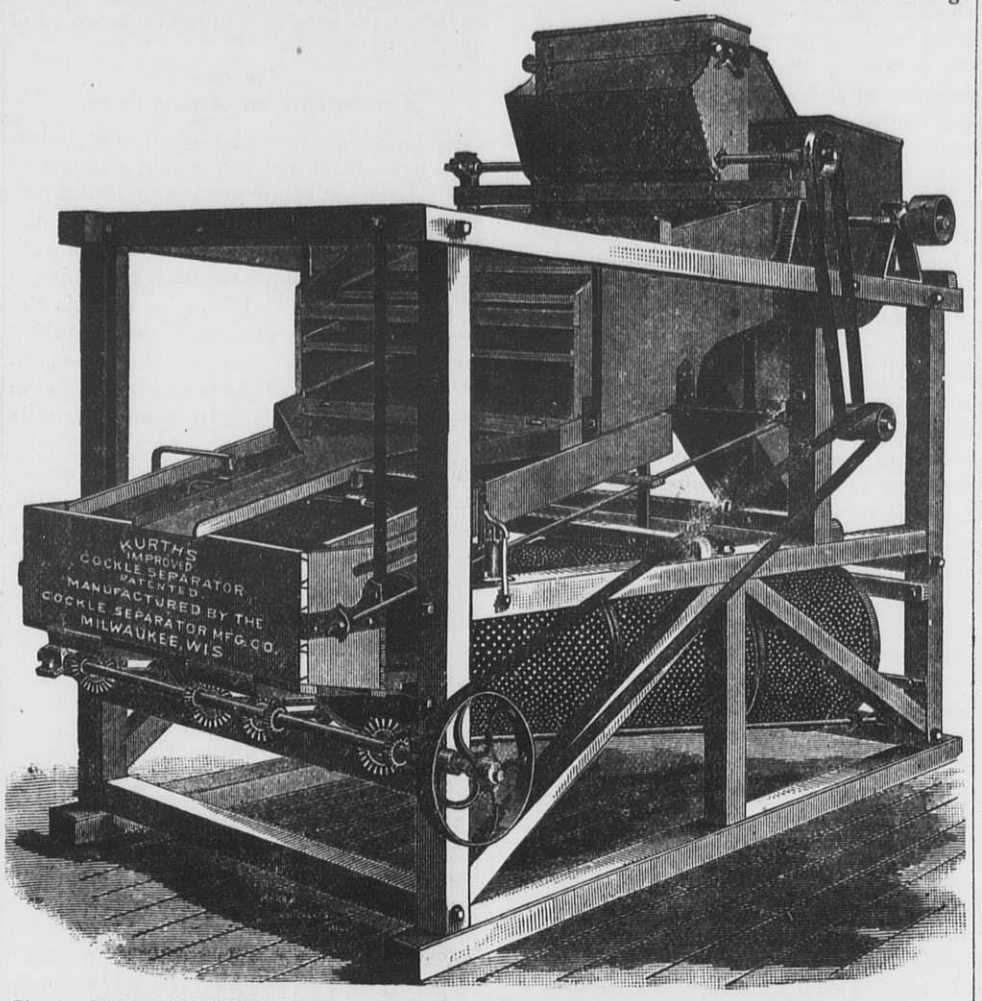


Fig. 1. LATEST IMPROVED COCKLE SEPARATOR AND OAT SEPARATOR COMBINED—TWO CYLINDERS AND SINGLE SUCTION.

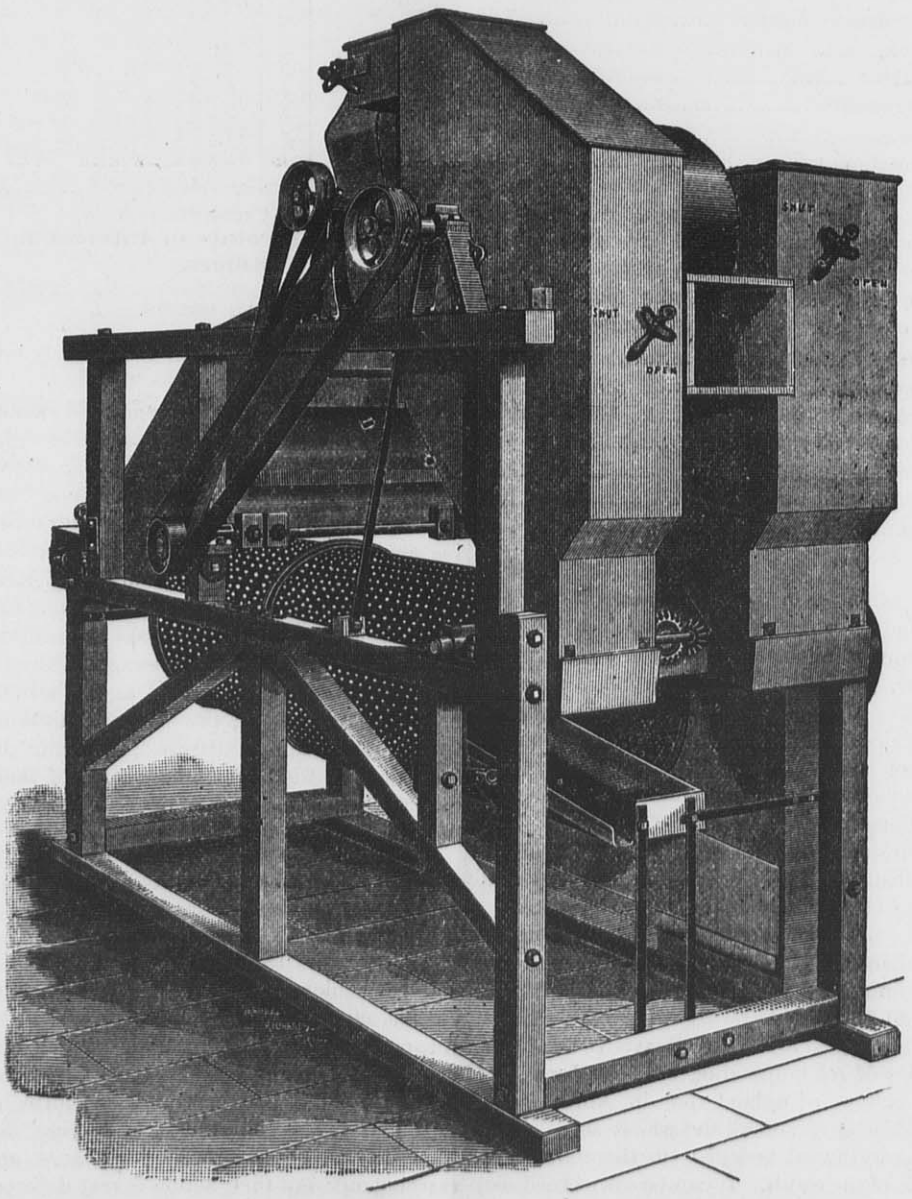


Fig. 2. LATEST IMPROVED COCKLE SEPARATOR AND OAT SEPARATOR COMBINED—ONE CYLINDER, DOUBLE SUCTION.

LEGAL.

An Important Judicial Decision in the United States Supreme Court in Relation to Patent Infringements.

A BIT OF COMFORT FOR MILLERS WHO ARE DEFENDANTS IN THE DENCHFIELD CASES.

A decision of importance to all railroad companies who use what is known as the "Tanner Car-brake" was rendered by the Supreme Court of the United States at Washington, March 13, 1882, in the case of Chas. L. Root, executor of Thos. Sayles, appellant, vs. The Lake Shore and Michigan Southern Railway Company, on appeal from the Circuit Court of the United States for the Northern District of Illinois.

This was a suit in equity, brought by Sayles against the railway company for alleged infringement of a patent upon an improvement in car-brakes. The patent upon which the complainant founds his claims was originally granted to Henry Tanner, the inventor of the improvement, on the 6th of July, 1852. On the 5th of July, 1866, it was renewed and further extended for a period of seven years. Of this patent the complainant is the assignee, and he brings this suit against the company for the unauthorized use by it of the car-brake in question from Aug. 6, 1869, to the expiration of the patent in 1873. He prays for an account of profits and for corresponding damages. The points of the defense set up by the railway company are, first, that after the expiration of a patent a court of equity has no jurisdiction to entertain a bill merely for an account and the recovery of the profits which have accrued to the infringer during the existence of such patent, the remedy in that case being at law for damages; and, second, that even if in certain cases such a jurisdiction exists, the present case does not fall within it.

The complainant, on the other hand, maintains that in cases involving the enforcement of the rights of patentees, resort may be had as a matter of right to a court of equity, for the mere purpose of establishing an infringement and asserting and recovering the profits of the infringer, upon the independent equitable ground that the latter is for that purpose a trustee of his gains for the use of the true owner of the patent, and is liable to an account as such.

JUSTICE MATTHEWS,

in delivering the opinion of this court, reviews very carefully and at great length the course of legislation and of judicial decision with regard to these questions, and comes to the following conclusions:

1. That a bill in equity for a naked account of profits and damages against an infringer of a patent cannot be sustained; that such relief ordinarily is incidental to some other equity, the right to enforce which secures to the patentee his standing in court; that the most general ground for equitable interposition is to insure to the patentee the enjoyment of his specific right by injunction against a continuance of the infringement, but that grounds of equitable relief may arise other than by injunction, as where the title of the complainant is equitable merely, or equitable interposition is necessary on account of impediments which prevent a resort to remedies purely legal, and such an equity may arise out of and inhere in

the nature of the account itself, springing from special and peculiar circumstances which disable the patentee from a recovery at law altogether, or render his remedy in a legal tribunal difficult, inadequate and incomplete, and as such cases cannot be defined more exactly, each must rest upon its own particular circumstances as furnishing a clear and satisfactory ground of excepting from the general rule.

2. That it does not appear from the allegations of the bill in the present case that there are any circumstances which would render an action at law for the recovery of damages an inadequate remedy for the wrongs complained of, and as no ground for equitable relief is presented, it is the opinion of this Court that the Circuit Court did not err in dismissing the bill. The decree is therefore affirmed.

This case decides broadly that no patent suit can hereafter be maintained in equity after the patent has expired, which conclusion is one of very great interest and importance to every patent lawyer, and equally so to every patentee interested in patent litigation in this country. This importance arises from the difference heretofore prevailing, in the measure of recovery in a patent case, between a suit at law and a suit in equity. In an action at law, the measure of damages is the license fee. In an action in equity the patentee recovers theoretical profits and savings. This suit was brought under the Tanner brake patent, owned by the late Thomas Sayles. It was alleged originally that every other kind of brake now in use by the railroad companies was an infringement of this patent; but in a case decided in the Supreme Court in 1878, against the Chicago & Northwestern Railroad Company, it was held that the Stevens brake, which is the one most largely used by the railroad companies in this country, was no infringement of the Tanner patent. Extending the measure of recovery, adopted by the Circuit Court in that case against all the members of the Western National Association, the decree amounted to, say $60,000,000; whereas, if the rule of the license fee, which obtains in a suit at law, had been applied, the extreme effect of the recovery would have been, say only $150,000. This is a fair comparison of the rules of recovery on the one hand in an action at law, and on the other hand in an action in equity. It has been the custom for a great many years to commence all patent suits in equity, and without any reference to the fact of the expiration of a patent, excepting that the suit should be brought within six years after the time of such expiration in order to escape the statute of limitations. The present opinion by the United States Supreme Court is that a patentee desirous of recovering profits and savings must sue in equity before the expiration of his patent. The conclusion arrived at by Mr. Payson, the counsel of the Western Railroad Association, that the only doorway open into equity to a patentee is the right to an injunction, is fully sustained in this opinion delivered by the Supreme Court by Judge Matthews. Thirty-four of the cases now pending against railroad companies in which the Tanner patent is involved, and which have been defended by the Western Railroad Association, are disposed of by this opinion; the statute of limitations having run against this patent, and the plaintiffs being unable for that reason to recommence in law.

This opinion will dispose of hundreds of suits now pending before United States Circuit Courts, among which in the opinion of the attorney of the Miller's National Association are the well known Denchfield cases now pending against most of the prominent millers in Minnesota, Wisconsin and Missouri. The Denchfield patent expired in April, 1879, and all these cases for infringement have been commenced in equity since that time. It may well be imagined that interested millers feel quite jubilant over this decision from the highest judicial authority in the land.

Rice Cultivation in Japan.

REPORT BY CONSUL-GENERAL VAN BUREN, OF KANAGAWA.

There are two general divisions of the rice plant (*Oriza Sativa*), "upland" and "lowland." The great bulk of the rice products is lowland rice, but the upland variety is grown in all Asiatic countries. In some of the richest provinces of China the tax or tribute collected in kind and sent to Pekin for the Imperial use, consists, in great part, of upland rice. The lowland variety, in all cases, requires a low, level soil, susceptible of being flooded several times during the season. The labor required for its production is immense. The plot of ground must be embanked, so as to hold the water, and the soil, after being flooded and exposed to the sun, bakes, and is worked with great difficulty.

On the other hand, the upland rice is grown on high dry ground, and in ordinary climates requiring no irrigation. The dry soil is easily and cheaply prepared for the seed, and needs no expensive system of irrigating ditches and embankments. The plot of ground can be so large as to admit the employment of the plow, and the loose, dry soil is fitted for its use. It is safe to say that the labor in Japan of producing an acre of upland rice is less than one-half that required for the lowland, and it may not be more than one-third. It is grown in all the ken, or districts, of Japan, and flourishes in any soil adapted to wheat or barley. The soil is plowed with the small Chinese plow, drawn by one animal, usually a cow or bull, or it is dug up with a mattock. The seed is sown in April or May, in drills about eighteen or twenty inches apart. In the drills, before the seed is sown, a compost of decomposed straw, closet manure, and ashes is strewn, upon which the seed is dropped, one to one and a quarter bushels per acre. The soil is dug up between the drills three or four times, to keep it loose and to destroy weeds. Two or three times, during the growth of the plant, small quantities of liquid fertilizers or poured on to the ground by its root. The ordinary height of the stalk, when matured, is about that of wheat or barley, but, when the soil is very fertile, or an extra quantity of fertilizers has been used, it will sometimes reach a height of four, and even five feet. It is ready for harvest in September or October, and is cut here with a sickle or knife, and thrashed the same as wheat or barley.

The process of hulling is the same as that used for lowland rice.

Any acre of land, which will produce a a good crop of wheat or barley, will produce thirty bushels of upland rice.

I have seen many acres yielding, each, 40 bushels or more. The weight of a bushel of this hulled rice is from 60 to 61½ pounds.

The analysis of this rice, as given by Pavy, Edward Smith and Parkees, is;

Nitrogenous matter	7.55
Starch	88.65
Dextrine	1.00
Fatty matter	0.80
Cellulose	1.10
Mineral matter	0.90
	100.00

By way of comparison I give an analysis, from the same authorities, of *flour*, obtained from 100 pounds of *wheat*, the highest quantity obtainable being eighty pounds:

Water	11.20
Fatty matter	0.96
Nitrogenous matter	11.68
Dextrine and sugar	5.76
Starch	47.76
Cellulose	1.36
Salts	1.28
	80.00

It will be seen by the above that, while the bushel of wheat yields a somewhat larger amount of nitrogenous matter dextrine and sugar, it contains less than fifty-three per cent. of the starch that a bushel of hulled upland rice does. This plant seems to flourish as well in the northern districts of this main island as it does in the middle and southern portions.

The mean annual temperature of the northern districts of this main island averages as it does in the middle and southern portions.

The mean annual temperature of the northern districts is 48.33° Fahrenheit: the extreme maximum, 88°; extreme minimum, 2°; rainfall, 51 inches.

I have been led to give the above facts with a view of recommending the introduction of the culture of upland rice in America. It could be grown on all the wheat soils of the great northwest, and also on the rolling uplands of the south. It can be sown broadcast, cut by an ordinary harvester, and threshed by any threshing machine. It is probable that our field tillage would not give such high yields as the thorough gardening of the Japanese, but our unmanured prairie soils are more fertile than those of Japan, even with all their fertilizers, and I believe that it would be safe to anticipate a yield of twenty bushels per acre. Even at the same yield, upland rice will furnish more than one and one-half times the nutriment for human food than an acre of wheat will, and its cash value will be three times that of wheat. The rice straw is fully as good for forage as that of wheat or oats.

I can see no reason, from the soil and climate, why this most valuable food-plant should not be produced with us, and I believe its introduction would be of great benefit to our agricultural interest.

I forward herewith three samples of the upland rice, in the straw, furnished me at Gifu, in the center of Nippon, measuring, as will be seen, from four to six feet; also, a sample of the hulled rice, in order that it may be compared with the rice produced in our Southern States; and a bushel of the unhulled seed, with which experiments may be made of growing it in our country. (These samples have been sent to the Department of Agriculture.)

Agriculture of Australasia.

Hitherto the pastoral and mining industries have furnished the staple exports of Australasia, but of late years agricultural products appear to be coming rapidly to the front. In New Zealand the exports of agricultural produce increased from $1,279,549 in 1875 to $3,716,230 in 1879. In Victoria the area under tillage has more than doubled during the past ten years. This colony in 1879 exported 321,809 centals of wheat and in 1880 1,472,123 centals. In South Australia the export of breadstuffs, which deservedly rank among the finest in the world, approximates in value to $10,000,000 annually. The following table will show the produce of the various crops for the several colonies for 1880—'81.

Produce of Crops for the several Colonies of Australasia.

Name of Colony.	Wheat Bushels.	Oats Bushels.	Barley Bushels	Maize Bushels.	Other cereals.
Victoria	9,719,049	2,358,459	1,063,751	49,299	415,900
New South Wales	3,708,737	356,121	160,602	4,483,457	22,290
Queensland	223,243	2,081	31,433	1,409,607	... ...
South Australia	8,606,510	50,070	151,886	... ...	58,963
Western Australia	413,644	25,080	114,552	448	11,543
Total	22,671,183	2,791,811	1,522,224	5,942,811	508,696
Tasmania	750,040	439,446	169,156	... ...	106,396
New Zealand	8,147,705	6,891,251	1,221,241	... ...	... ...
Grand total	31,568,928	10,122,508	82,912,621	5,942,811	615,092

[Written for the UNITED STATES MILLER.]

Mechanical Points of Interest to Millers.

VARYING DRAFTS.

The question of draft runs very closely into furrow outline.

In all quarter dresses having parallel secondary furrows, (whether the leaders are straight, circular, or spiral,) the draft of the short furrows is greater than that of the leaders; and if it be a disadvantage to have greater crossing angle at the skirt than at the eye, the furrows which have the most draft will have the greatest crossing angle. If the short furrows are given the same draft as the leaders, they will have the same crossing angle, at a given distance from the skirt, as the leaders have. There may be two or three different lengths of diverging furrows, all having the same draft at the skirt, though some of them may not reach more than half way towards the eye.

Dresses of this type will not be strictly "quarter dress," although the leaders apparently divide them into so-called "quarters" or fields.

DUTIES OF FURROWS.

Here opinions differ. If furrows did nothing but admit air to the buhrs, it would be cheaper to drill holes through the latter, and then there would never be any furrow dressing required! They certainly perform at least four offices:—granulation, cooling, distributing the chop between the faces, and carrying out; but their action is very different from what is generally understood concerning them.

In proof that furrows are not essential, stones are run, though rarely, without any furrows at all; and the granulation, distribution, and carrying out have not been stopped, though the chop was unduly warm; and in regard to the carrying out by "shears-like action," tests have been made with the furrows reversed, and not greatly affecting the capacity of the buhrs.

NUMBER OF FURROWS.

Evidently a given area in furrows may be got by having few wide furrows, or more narrow ones of proportionate width; by a few long furrows, or more short ones of proportionate length.

Here the questions of stone diameter, material operated on, and product desired, come in, complicated with details concerning the method of "ventillating" the stone, concerning the bosom, hardness, and porosity of the stones, etc. Modern tendency seems to be to an increase in the number.

DRESS.

The "quarter dress" proper is a barbarism as generally applied; and when we consider the course of the grain or other material, in its outward progress from eye to skirt, we must incline to such dresses as will give all the furrows on each stone, as far as possible, the same draft:—this, entirely independent of the question as to whether or not the angle of crossing of bed and runner furrows shall be the same for all points along the length of the furrows. The "quarter dress" may be abolished and still leave free choice between straight, bent or curved furrows; between furrows all of a length and those of varying length; between those having the same crossing angle all the way out, and those having the crossing angle vary at different distances from the eye.

("Crossing angle" means the angle formed by any furrow in one stone with its mate in the opposite stone. With curved furrows the angle is measured between the tangents at the point of crossing.)

The writer's objections to the quarter dress are based on analogy. Evidently the fewer the quarters the greater the disproportion between the draft of the leaders and that of the secondaries, in stones of equal diameters.

THE QUARTER DRESS.

We advise our readers to draw the various millstone dresses in circles about 6 inches in diameter, one on cardboard and the other on transparent cloth or paper, and sticking a pin through the centers of both, note the crossing of the furrows. If this does not convince them that the ordinary quarter dress with parallel furrows is imperfect especially with few quarters on the stones, it will at least set them thinking.

The *path of the material* is different in under runners to what it is in upper runners, and different in vertical mills from either. In the first case the material falls on a "live" surface, in the second, on a dead one; in the third, on neither one, strictly speaking.

In the upper runner the path, if the furrows do not change it, is stated by KICK to be a spiral; in the under runner, the involute of a circle.

FURROW SECTION.

I consider that the cutting work done by the furrow is rather limited, and that the best section is that of a right-angled triangle, having the right angle B in the bottom, the obtuse angle A at the front, and the acute angle C at the feather edge or back, thus: (see fig. 1.)

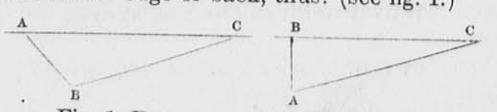


Fig. 1, RIGHT. Fig. 2, WRONG.

This gives freer action than when the obtuse angle A is at the bottom and the front edge AB is vertical, as in fig. 2; and the first method is easier made with a pick or an emery wheel.

SMOOTHNESS OF LAND AND FURROWS.

The smooth and the rough furrow advocates do battle on this head, without ever coming to much of a conclusion, or rather change of opinions. It seems, however, as though the smooth furrows cut the bran up less than rough ones, in wheat reduction; and many millers, while religiously adhering to "cracking" on the face, rub the furrows smooth with a corundum block.

Cracking the faces is now done finer and finer each year; the "diamond dressers" having paved the way for this, and the emery wheel dressers following them up towards absolutely smooth land and furrows.

Middlings Purifiers in Custom Mills.

BY J. H. REDFIELD, SALEM, INDIANA.

The question is often asked, "Will a purifier pay in a custom mill?" We claim that even under the old style of milling a purifier will increase the miller's profit sufficient to repay its cost in a few months. Every miller knows that however close he grinds he will of a necessity produce some middlings.

Suppose, now, that under the old style of grinding the average product of middlings is only five pounds per bushel of wheat ground, and he grinds eight bushels per hour per run of stones, which would equal a product of fifty pounds per hour for each run of stones or five hundred pounds for ten hours grinding for each run of stones.

Suppose he has but one run of wheat stones, and a custom to keep it running ten

hours per day, at the close of the day's grindings the miller or his customers have five hundred pounds of an article that is almost worthless, only for feed. Should he grind it without purifying, it would make a very low grade of flour; and to run it into the eye of the stones and grind with the wheat, would be ruinous to the entire product. Under ordinary circumstances these middlings contain the very cream of the flour.

Now suppose he has a purifier and he runs this five pounds per bushel in the eye of the stones and regrinds with the wheat and reduces it to flour (we are now speaking of a case where the miller has no middlings mill —it is always better to grind the middlings on a separate stone) he will have an increase of at least four pounds per bushel, and make a better grade of flour; or, suppose he stocks it and regrinds it separately, he will have of his five hundred pounds of almost worthless middlings, over two barrels of high grade flour.

And, again, in using a purifier, it is not necessary to grind so low to make a yield. Grind high with a purifier; if you do make more middlings, so much the better; purify and regrind by running into the eye of the wheat stones, or which is better into a middling stone, and you will make better flour and more of it, and at the same time you can grind more grain with a given amount of power.

The Great European Spy.

The Paris *Echo* of Feb. 28th had the following interesting narrative:—"A political personage, whose importance and influence were far greater than his fame, died a few days ago in Paris. M. Blindworth was known amongst his profession as the "Dean of the European Corps of Spies." It was once said of him—'This man came into the world to cajole and deceive Emperors and Kings.' His political value in the narrow circles of the supreme official rulers of the world was estimated at so high a price, that he was able, during his most successful period, to command a princely income. Although his surname has a German look, it appears that our own country has some right to claim a share in him. His father was an English mechanic, who emigrated to Göttingen when England and Hanover were ruled by the same sovereign. The son made full advantage of his residence in that learned city. He studied philology and political science, and earned a brilliant repute at his examination for the doctor's degree. From the moment of leaving the University he adopted the career of a political adventurer. He went first to Berlin, where he became a member of a secret society. The murder of Kotzebue, however, seems to have scared him, and he took pains to ingratiate himself with the leaders of the reactionary party. Prince Wittgenstein, Count Oriola, and other persons of high influence, who gave tone to the polite society of the Prussian capital, found use for his talents. He was employed in a series of political intrigues. He found a way of deceiving the keen-witted Varnhagen von Ense, and was received behind the scenes by the Liberal leaders as an enthusiastic fellow-worker, whilst he was betraying all their counsels to their foes. His work was carried on under numberless disguises throughout Northern Germany. He was in rapid succession a journalist, a wealthy private scholar and scientist, and a theatrical director. He became head of the 'Secret Cabinet' of the Sovereign of Brunswick, the notorious 'Diamond Duke.' From his Court Blindworth kept up a correspondence with official persons all over Europe. The Ambassadors and Ministers of all Courts knew and feared him, as the sailors feared the 'Flying Dutchman.' Guizot made great use of him. Metternich pressed him to go to Vienna. There was a conflict for the possession of this human treasure amongst the wire-pullers of Legitimacy and Reaction. Blindworth ultimately gave his services where there seemed to be prospect of the biggest pay, and settled in France. He was Louis Philippe's secret agent to the Court of Spain, and had a leading finger in the conspiracies of kings and diplomatists, which were suddenly shattered by the revolutionary volcano of 1848. That event naturally drove him from Paris, and he returned to his native land. He settled on the Rhine, near Prince Metternich, who had been driven from Vienna, and devoted himself to the culture of his renowned vineyards on the Johannisberg. The 'Dean of Spies' spent his time in political study of a concrete character. He drew up lists of 'suspects,' which he knew would be useful when the whirligig of time brought about a reactionary counter-revolution. An acquaintance who knew him at this period said that he used to rub his hands with glee as he read the 'Stupidities of Frankfurt'—or the German Parliament—and anticipate the period when the triumphant Radicals would reap the whirlwind. He kept irons in both fires. His clever daughter Agnes wrote up Austria in one journal, while he himself wrote up Prussia in another, as no sure forecast could be taken by the most astute spy which of the two great military German Powers would crush the revolution, and secure for itself predominance over Germany. Between the defeat of the revolution and the outbreak of the Russophobist craze, which turned the attention of the European nations from internal reform at home to fighting in the far East. Blindworth was one of the most courted persons in Europe. Koppel-Ellfeld, who was personally acquainted with the 'little sultan,' says that the Manteuffel Cabinet loaded him with business, that King Frederick William IV. employed him with brilliant success in the internal affairs of the Zollverein crisis, that the Austrian Government could not dispense with his services, that Lord Palmerston was incessantly inviting him to London, that he and Gortschakoff were in continual conference, and that Napoleon III. used to send for him in order to get the benefit of his advice and his encyclopædic knowledge of the seamy side of international politics. A good deal of the omniscient profundity which it was once the fashion to attribute to the French Cæsar may be paid back by future historians to its rightful proprietor—the son of the English mechanic. Throughout this period of his life, in which he had nearly every sovereign and diplomatist in Europe for a customer, Blindworth lived at Brussels, in order to keep up a show of neutrality. This great intriguer, who had such a share in all the political changes of Europe between 1830 and 1866, had no son, like Oxenstierna, to whom he could confide his general opinion of the Goverments of our century. It is said that Samarow has utilized some of Blindworth's communications. During his later years he sank into wealthy obscurity. It is not even known when he moved from his charming house in the Quartier Leopold at Brussels and settled in Paris. Nor does anyone seem to know what has become of his gifted daughter and his two grandchildren. His death, a fortnight ago, recalled the title by which he was known amongst his employers—*the Dean*."

Flour Adulteration in Germany.

REPORT BY CONSUL SMITH, OF MANNHEIM.

I have the honor to report that the subject of adulteration of food and other materials having become a very important matter of interest throughout the world, I herewith transmit the result of my investigations regarding such adulterations in Germany, and the laws of the Empire concerning the same.

Flour made from wheat, rye, and barley, contains chemically combined nutriments. albumen, starch, and salts. Flour may be damaged without adulteration by faulty manufacture, or if the grain is not thoroughly cleaned before grinding. If not perfectly manufactured, or if overheated after manufacture, it forms itself into small balls and acquires a disagreeable odor. It also absorbs moisture from imperfect barrels and a bad taste from oils contained in the wood from which the barrels are made. It may gain dust and a bad taste from *Secale cornutum* seeds, etc,, remaining after improper separrating the grain from the husk. Bread made from such flour is not healthful or palatable. In order to make it palatable and salable, alum, copperas, and similar substances are used, giving the bread a grayish tint. The usual mode of adulteration is to use oxide of zinc. Chemists have found 3 to 3.5 per cent. of oxide of zinc in bread, yet zinc and copper may be discovered to a certain degree in bread baked with old wood that has been covered with these metals, the wood readily impregnating itself with these mineral elements.

Flour is also adulterated with spar (baritza), plaster of Venice, chalk, pulverized stone, etc., thus increasing the weight. Exportations have been made from Netherlands of so-called imitation flour made of crushed spar and plaster of Venice. These exportations were made to such an extent that the Prussian minister of commerce found it necessary to publish a warning against the production. It was observed that the mixture of plaster of Venice amounted to 30 per cent., while the mixture of spar showed but 16 to 20 per cent. Imitation flour is used to increase the weight of genuine flour by mixture. Vegetable substances—peas, beans, Indian corn, dried potatoes, and oats—are mixed with wheat, manufactured, and sold as wheat flour. These substances are not considered dangerous to health and are not prohibited. But the mixture of flour with spar, plaster of Venice, alum, copperas, oxide of zinc, and other mineral substances is considered dangerous, and is prohibited. Any kind of adulteration of flour diminishes its nutrimental value. Mixtures are not always made at the place of manufacture, but more often by the retail dealer in flour, and by the baker, who thus increases the size and weight of the loaf.

A Fly-Wheel Cat.

A white cat which was about Winchester's shop was missed recently. In the forging department of the drop shop is an upright engine where the blowing is done for the forges. The other morning the man started his engine, and looking about the wheel he noticed something on the fly-wheel. The wheel was making a great number of revolutions per minute—going so fast that the spokes were invisible. He did not make out what it was, but paid no particular attention to it, as he thought it was the sun shining on the wheel. Glancing that way occasionally, he noticed the same thing several times. He started the engine at 7 o'clock, and at about 9:30, noticing the object again on the wheel, he thought he would stop the engine and see what it was. He stopped it and got over where it was, and found it was a white cat clinging to the wheel. There the cat had been hanging on for two and a half hours. He took the cat down, and it had become cross-eyed. He put the cat in a box and cared for it, and in about two or three days it began to get around and its eyes commenced to have their natural look. In about a week it came to the room of the foreman, J. D. Eager, a branch of the forge department. Mr. Eager fed it and commenced to train it. The animal reciprocates the kindness shown, remaining about the forge all the time and evincing quite an interest in the business, and is quite a pet among the workmen. The above is a fact.—*New Haven (Conn.) Journal and Courier, February 6.*

Foreign Items.

THE flouring mill belonging to Messrs J. T. & S. Fearweather, at Skeldersgate, York, England, burned recently together with some grain warehouses adjoining. Loss $50,000. The property was well insured.

MESSRS. SUTCLIFFE & SONS Mill at Rochdale, England, was recently burned. The fire was caused by an explosion in the flour dressing department in the sixth or *top* story which had strong side walls. A portion of the roof was blown off. The damage is estimated at about $175.000.

THE Buxburn Mills near Aberdeen, Scotland, have been destroyed by fire. Loss about $30,000.

MESSRS. GANZ & Co. of Budapest, Hungary, have won their suit against L. Nemelka & Co., of Vienna, for infringement of their roller mill patents after a tedious litigation.

IT IS SAID that over 4000 mills on the Continent of Europe have substituted rollers for millstones during the last four years.

THE death of James Alexander, Esq., proprietor of the Belfast Flour Mills, at Belfast, Ireland, is announced.

BILLS for the increase of import duties on breadstuffs have been brought before the Austrian Parliament. Austro-Hungarian millers are strenously opposed to it. They say that they have suffered much from the present duties in diminished exports of flour to Germany and also in their increased import thence.

FROM January 1st to February 3d, 5,209 tons of potatoes were shipped from Glasgow to the United States.

A GERMAN named Dittmar has invented a cheap process for converting petroleum oil into a solid substance for transportation and which can again be liquefied. A company has been organized in St. Petersburg, Russia, to operate the patent in connection with the Russian oil trade. Several patents were taken out for a similar purpose in this country some years ago but were all found to be impracticable in operation.

A NEW LINE of steamships has been put on between Trieste to New York. These steamers will touch at Portugese, Spanish and Mediterranean ports to receive and deliver freight. It is anticipated that this line will greatly increase American trade with Austria.

ELECTRIC PURIFIER COMPANY,

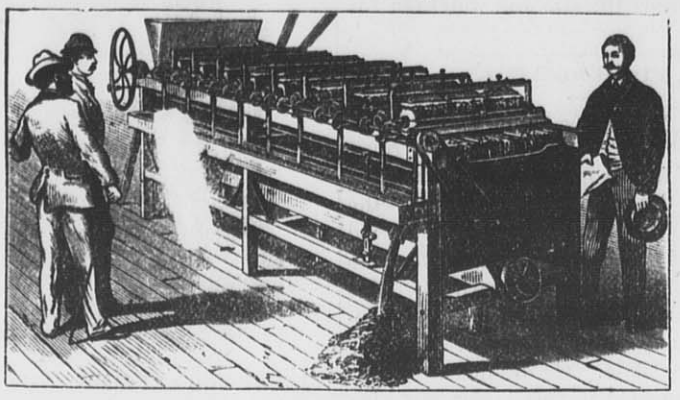
—OF—

New Haven, Conn.

Factory, New Haven, **New York Office, 17 Moore Street.**

This Company was Organized at New Haven on the first of March, 1881, with a Capital of $300,000.

Electric Middlings Purifiers.



HAVING PURCHASED THE SMITH-OSBORNE PATENTS GRANTED BY THE

United States, Great Britain, France, Belgium, Austria and Canada.

The first Machine manufactured was put up soon after the United States patent was granted, in February, 1880, in the *ATLANTIC MILLS, BROOKLYN*, and has been in almost constant practical use since, demonstrating beyond a question that it possesses the following advantages:

It Purifies Middlings Absolutely without Waste.
It Purifies Middlings with Greatly Reduced Power.
It Purifies Middlings with Greatly Reduced Space.
It Purifies Middlings with Greatly Increased Rapidity.
It Purifies Middlings from Spring and Winter Wheat Equally Well.
It Purifies Middlings with the Best Results.
It Dispenses with the Use of Air Blasts.
It Dispenses with the Use of all Dust Houses.
It Dispenses with the Use of all Dust Collectors.
It Dispenses with the Dangers of Explosion and Fire.
IT PURIFIES DUST HOUSE MATERIAL OF ALL KINDS.
IT PURIFIES THE FINEST MIDDLINGS OF ALL KINDS.
It is Remarkably Adapted to Custom Mills.
It is Excellently Adapted to Manufacture Farina.

WHERE THE ELECTRIC PURIFIERS MAY BE SEEN IN OPERATION:

Atlantic Mills, Brooklyn, N. Y.; Archibald Schurmeier & Smith, St. Paul, Minn.; F. L. Johnston & Co., St. Louis, Mo; Washburn, Crosby & Co., Minneapolis, Minn.; Norton & Co., Chicago, Ill.; Sanderson & Co., Milwaukee, Wis.; M. C. how & Co., Cleveland, Ohio; James K. Hurin, Cincinnati, Ohio; Mosely & Motley, Rochester, N. Y.; Chas. Tiedman. O Fallon, Ill.; Lyman & Co., Norfolk, Va.; Texas Star Flour Mills, Galveston, Texas; Zenith Milling Co., Kansas City, Mo.; C. Hoffman & Son, Enterprise, Kansas; Richter & Co., Williamstown. W. Va.; Kinney & Hobart, Burrton, Kansas; Parkville Milling Co., Parkville, Mo.; Norton & Co., Lockport, Ill.; Ballard, Isom & Co., Albany, Oregon; Niedammer & Walton, Buena Vista. Ind.; Kimberly & Clark Co., Appleton, Wis.; Cyrus Hoffer, Lewisburg, Pa.; Roberts & Briggs, Seneca Falls, N. Y.; Phillips & Thomas, Kennedy, N. Y.; Hillsdale City Mills, Hillsdale, Mich.; Susong, Logan & Co. Bridgeport, Tenn.

SOMETHING NEW.

A Combination Electric Purifier—A Complete System of Three Purifiers in One.

Samples of work will be sent upon application, by mail, and all inquiries answered from the New York Office.

Parties contemplating building new mills, or reconstructing old ones, should see the superior working of the ELECTRIC SYSTEM before making contracts for Purifiers elsewhere.

JOHN RICE,
No. 17 Moore St., NEW YORK. **General Manager.**

GUNN, CROSS & CO., Minneapolis, Minn.,
Manufacturers and Agents for the Northwest.

GEO. G. SMITH, San Francisco, Cal.,
Manufacturer and Agent for the Pacific Slope.

JAMES E. LOOMIS, St. Louis, Mo.,
General Western Agent.

[Mention this paper when you write to us.]

RICHMOND MANUFACTURING CO.,

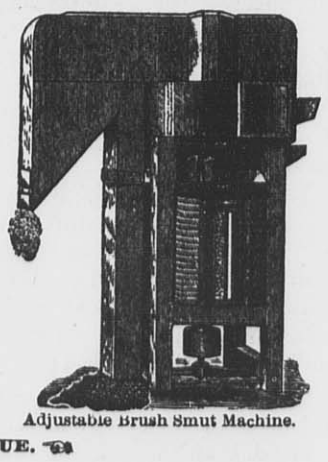
LOCKPORT, N. Y.,

—Manufacturers of—

RICHMOND'S CELEBRATED

Smut Machines,
Brush Machines,
Grain Separators,
and Bran Dusters.

Nearly Two Hundred of these Machines are now in operation in the city of Minneapolis, Minn., alone, and more than sixty in the city of Milwaukee, Wis. They are also extensively used in many other sections, both on Winter and Spring Wheat.



Adjustable Brush Smut Machine.

SEND FOR DESCRIPTIVE CATALOGUE.

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HARRIS-CORLISS ENGINE.

—BUILT BY—

WM. A. HARRIS, Providence, R. I.

Built under their original patents until their expiration. Improvements since added: "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and "Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Coudensing and Non-Condensing forms.

The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and inter-changeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine.

The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

WM. A. HARRIS, Proprietor.

[Mention this paper when you write us.)

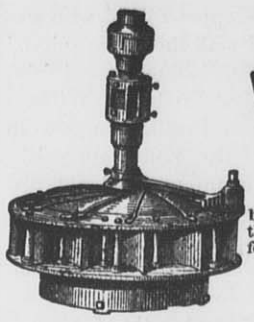
A PURIFIER

That fills all the demands of modern milling.
That is subject to the most complete control possible.
That gives double the capacity of any other in the same floor space.
That has two Screens, each with its own Feed Bar, and each tails off.
That has the best (patented) ever used on a Purifier.
That has the most thorough control of the blast.
That has the most convenient method of "cut-off."
That has absolutely the best cloth cleaner (patented) in use.
That has the perfection of cloth tighteners used while running.
That is made either single or double, (double principle patented).
That carries 25 to 90 square feet of bolting surface, against 13 to 45 in others.
That costs no more, nor as much as others with half the capacity.
That has its bearing boxes detached from the wooden frame.
That renders them fire-proof. These are recent and important attachments
That do s its work "not absolutely without waste" BUT WELL.
That has no screw conveyor or gear wheels to absorb power, but
That has many new and important devices, convenient and simple.
That does not infringe any patent, (can convince any one of this).
That is not an experiment, but has been tried and tested by hundreds.
That is in use from Long Island to San Francico, from Dakota to Texas.
That not one of which has ever been returned by any miller,

These are some of the things we have to say about the Case Purifier, and if one jot or tit of them is found to be untrue. we will take the machine back and pay all expenses, including freight both ways. Can fill orders promptly. Address

CASE MFG. CO., Columbus, Ohio.

[Mention this paper when you write]



James Leffel's Improved
WATER WHEEL.

NEW PRICE LIST FOR 1881.

The "OLD RELIABLE" with Improvements, making it the **Most Perfect Turbine now in Use**, comprising the **Largest** and the **Smallest** Wheels, under both the **Highest** and **Lowest Heads** used in this country. Our new Pocket Wheel Book for 1881 and 1882 sent free to those using water power. Address

JAMES LEFFEL & Co., Springfield, Ohio.
and 109 Liberty Street N. Y. City.

[Mention this paper when you write us.]

BOTTLED BEER.

VOECHTING, SHAPE & CO.,

SOLE BOTTLERS OF

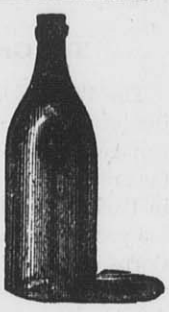
JOSEPH SCHLITZ BREWING COMPANY'S

CELEBRATED MILWAUKEE LAGER BEER,

Cor. Second and Galena Streets,

MILWAUKEE, - - - WISCONSIN.

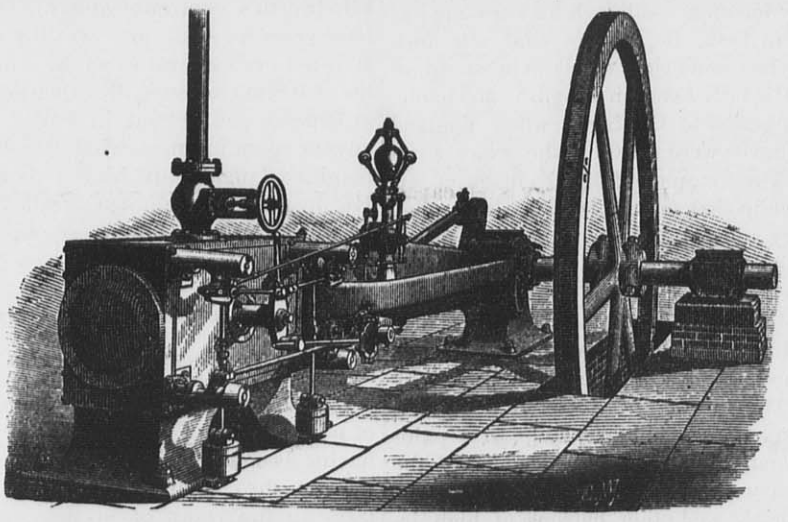
BOTTLERS' SUPPLIES CONSTANTLYON HAND.



[Parties corresponding will please state where they sawthis advertisement.]

ATLAS-CORLISS ENGINE.

Will Replace Ordinary Engines Guaranteeing to Save One-Third Fuel.



WRITE FOR ENGINE PAMPHLET.

ATLAS ENGINE WORKS, INDIANAPOLIS INDIANA, U. S. A.

BUILDERS OF ALL CLASSES OF

Engines and Boilers,

We Build The Best Farm Engines and Small Engines for warehouses and elevators.

[Mention this paper when you write us.]

"THE GREAT ROCK ISLAND ROUTE"

Calls your attention to the following REASONS WHY, if about to make a Journey to the GREAT WEST, you should travel over it:

As nearly absolute safety as is possible to be attained. Sure connections in UNION DEPOTS, at all important points. No change of cars between CHICAGO, KANSAS CITY, LEAVENWORTH, ATCHISON or COUNCIL BLUFFS. Quick journeys because carried on Fast Express Trains. Day cars that are not only artistically decorated, but furnished with seats that admit of ease and comfort. Sleeping cars that permit quiet rest in home-like beds. Dining cars that are used only for eating purposes, and in which the best of meals are served for the reasonable sum of seventy-five cents each. A journey that furnishes the finest views of the fertile farms and pretty cities of Illinois, Iowa and Missouri, and is afterwards remembered as one of the pleasant incidents of life. You arrive at destination rested, not weary; clean, not dirty; calm, not angry. In brief, you get the maximum of comfort at a minimum of cost.

That the unremitting care of the Chicago, Rock Island & Pacific Railway for the comfort of its patrons is appreciated, is attested by its constantly increasing business, and the fact that it is the favorite route with delegates and visitors to the great assemblages, political, religious, educational and benevolent, that assemble from time to time in the great cities of the United States, as well as tourists who seek the pleasantest lines of travel while *en route* to behold the wonderful scenes of Colorado, the Yellowstone and Yosemite. To accommodate those who desire to visit Colorado for health, pleasure or business, in the most auspicious time of the year, the Summer season and months of September and October, the Company every year puts on sale, May 1st, at all coupon ticket offices in the United States and Canadas, round trip tickets to

DENVER, COLORADO SPRINGS AND PUEBLO,

At reduced rates, good returning, until October 31st. Also to San Francisco, for parties of ten or more, good for ninety days, at great reduction from regular fares.

REMEMBER, this is the most direct route for all points WEST and SOUTHWEST. For further information, time-tables, maps or folders, call upon or address

R. R. CABLE,
Vice-Pres't and Gen'l Man'gr, Chicago.

E. ST. JOHN,
Gen'l Ticket and Pass'r Agent, Chicago.

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We continue to act as Solicitors for Patents, Caveats, Trade Marks, Copyrights, etc., for the United States, Canada, Cuba, England, France, Germany, etc. We have had **thirty-five years' experience.**

Patents obtained through us are noticed in the SCIENTIFIC AMERICAN. This large and splendid illustrated weekly paper, $3.20 a year, shows the Progress of Science, is very interesting, and has an enormous circulation. Address MUNN & CO., Patent Solicitors, Publishers of SCIENTIFIC AMERICAN, 37 Park Row, New York. Hand book about Patents sent free.

Over 1,500 of these Turbines IN USE.

It has tight shutting and easily operated Gate; gives more power for the water used, and will last longer than any other Turbine Large shop with improved tools for making this wheel and machinery. Illustrated Pamphlet and Catalogue with prices sent free by

BURNHAM BROS.

[Please mention this paper when you write us.]

"Work" and "Energy."

Prof. Preece, in a recent lecture, thus clears up the definitions of "work" and "energy," which terms are often loosely used, and in such a manner as to confuse students:

"Suppose a gardener, with a ton of gravel in front of him, were told to move that gravel to a height of three feet. He would go to work with his spade; he would move shovelful after shovelful from the ground-line up to the three-foot height, and after he had moved the whole of it you might readily imagine that he would be a little fatigued. Now, whenever a person does anything which causes a little fatigue, he does what we call work. The gardener, in lifting the gravel, would perform an amount of work which is capable of being measured. I will give you another illustration: Supposing some of you boys were put beside a pile of cricket-balls, and for a wager or prize you were called upon to throw the balls as fast and as far as you could. A good thrower would perhaps throw the first ball 80 yards, he would throw the second ball 75 yards, the third 70 yards, the fourth 65 yards, and so each ball that he threw would go a less and less distance, until he had no strength left, and he could throw no more balls. Now, that boy would have done work; something would have passed out of him into the balls; he has, as it were, passed something that belonged to him into the cricket-balls, and as a result he feels fatigue through the loss of this something. Take another illustration: Supposing two crews agree to row a race. They start full of life and full of energy; they pull with all their hearts and might, and arrive at the goal, in common language, thoroughly pumped out. Something has gone out of them into the boat. That which has gone out of the crew, and out of the boy who threw the cricket-balls, is what we call energy, and what they have done is to do work upon the boat. Another example is in the case of football: A boy kicks a foot-ball and makes a splendid goal. To do that he has sent something out of his body into the ball which hurtles through the air past the goal, and the game is won. In all these illustrations something is done which results in fatigue, work is performed and energy is lost; in fact, work done means energy applied, and energy applied means work done. As mental energy is our capacity for learning lessons, for going through examinations, and that kind of thing, so the energy of the kind I speak of is the capacity for doing absolute physical work. The generality of this energy is immense. It is a difficult thing to grasp the fact that there is something in existence that we cannot feel, that we cannot touch, and that we cannot see, but which gives us all the force and all the power we possess."

Scale in Boilers.

Most all water contains vegetable, earthy and solid matter in solution; those which occasion the greatest trouble are probably sulphate and carbonate of lime, oxide of iron, magnesia, alumina and silica, and are found in greater or less proportion in water of different localities. They are capable of being precipitated by heating water to a high temperature, as in the case of the steam boiler, when the precipitated salts settle, covering the tubes, sides and bottom of the boiler with a thin coating for each quantity of water heated, which, if not properly treated, will soon form into a hardened scale very difficult to remove. The best preventive of scale is probably a good filter heater, in which the feed-water can be raised to a temperature sufficiently high to deposit the matter held in solution, in the filter of the heater, before entering the boiler. A practice which facilitates the making or hardening of scale in boilers, is that of blowing out the water under a high pressure. The only time to open the blow-cock when under steam, is in the morning before starting the engine; a small percentage of sediment may then be blown out, but it should only be continued for a few moments at the farthest.

When the boiler is to be emptied, it should, if circumstances will allow, stand until the brick-work, water, etc., become quite cool, then the blow-cock can be opened, and while the water is running out, or immediately after it is out, take off the man-hole plate, and with a hose wash the sheets and tubes well while the sediment is still soft. With this treatment very little scale will adhere to the iron, but all that does should be dislodged as soon as possible, and on every occasion, by scaling bars, chisels and hammers. Any sediment which the washing fails to remove should be scraped out before refilling the boiler. In cases where blowing out is compulsory, it should be done with as low a pressure as practicable. Water should be run out whenever it shows signs of being dirty—about once in two weeks is sufficient, as there is no use of emptying the boiler of water which has made its deposit and is comparatively good, to replace it with that which contains matter in solution to form new scale.

The great objection to scale is, that, being a non-conductor of caloric, it prevents a large proportion of the heat of the furnace from entering the water, the heat escaping up the chimney, causing a waste of fuel and decreasing the evaporating power of the boiler. With a heavy deposit of scale there is great danger of the iron which is in contact with the fire becoming burned, as the scale interposes a barrier to the radiation of the heat, and separates the water from the iron.—*Extract from the Prize Essay written for the N. Y. Mechanical Engineer by Mr. H. L. Stellwagen.*

American Newspapers in 1882.

The American Newspafer Directory, which will be issued next month by Geo. P. Rowell & Co., of New York, will contain the names of 10,611 periodicals in the United States and Territories, which is a gain of 344 in the year just passed. The number of daily papers has increased in a somewhat larger proportion, and is now represented by a total of 996 against 921 in 1881. The largest increase has been in New York—10 dailies, 29 of all sorts. Illinois and Missouri show a percentage of gain which is even greater, while Colorado leads all others in the percentage of increase, both of daily and weekly issues. California, Nebraska, Nevada, Oregon, South Carolina, Tennessee, Vermont, and West Virginia have fallen behind 1881 in the total number of periodicals issued. In Georgia, Maine and Massachusetts the suspensions have exactly counterbalanced the new ventures. In every state not mentioned above, and in the territories, there has been an increase.

Fix by Law.

The "unterrified grangers" demand that the millers' rate of toll should be "fixed by law." This they have demanded in convention assembled. The millers should now assemble in convention and demand that the price of farmer's wheat should be "fixed by law." And then the old maids should assemble and demand that all the old bachelors and widowers should marry them in a time "fixed by law." This "fixed by law" business is played out so far as it applies to fixing the prices of produce and merchandize, which can only be fixed by the relation of supply to demand; and if these honest and well-meaning grangers will take a second thought on the subject, they will see the point.

Items of Interest.

The *Prairie Farmer* gives the following recipes for making Graham bread:

No. 1.—Three pints of Graham flour, or two pints of Graham and one pint of wheat flour, one pint warm water, one cup yeast, one-half cup of molasses, a little salt, one-half teaspoonful saleratus.

No. 2.—One pint sweet milk, two pints Graham flour, one-half cup molasses, to which add one teaspoonful soda, and one of salt. Mix thin enough to pour.

No. 3.—Three-quarters of a pint of Graham flour, three-quarters of a pint of white flour, a handful of Indian meal, a teaspoonful salt, three heaping teaspoonfuls of baking powder. Mix all thoroughly together while dry. Then stir in half a small teacupful molasses; add sufficient cold water, or sweet milk, and water to make a stiff dough. Bake immediately.

Warning to Wheat Eaters.—"How is it," asked a reporter of a Stockton, California paper of a prominent wheat buyer, "that you wheat men always spit out the grain you sample?" "That is easy enought to explain" said the man of cereal proclivities. "Do you know that many a man has ruined his constitution, and in lots of instances consumption has been brought on by acquiring the habit of eating wheat? The reason is this, the husk of the wheat somehow or other finds its way into or affects the lungs. In Mark Lane it is the custom to fine any man found eating wheat one shilling." This will be received as news by the general public.

A remarkable discovery is said to have been made accidentally in Dakota. It is a new fuel, an oil saturated rock as inflammable as the best cannel coal. The discovery was made in Mix County where some men were blasting a ledge when a piece of the rock fell into a fire near by and was quickly in a blaze. A pile of three bushels of the rock was set on fire and burned freely. This petroleum rock is to be tested on a Milwaukee railroad as fuel for locomotives. A piece of the rock about the size of a hickory nut was tried in a retort recently by a Yankton scientist, and found to contain three drops of petroleum. The inflammable property of the shale comes from this oil. It is said that the same material abounds along the Missouri River and in some parts of Iowa.

Convict Mechanics—Superintendant Pilsbury reported to the New York Senate that at Sing Sing prison, Perry & Co. employ 906 men at 56 cents per day, at manufacturing stoves. Of this number 200 are general laborers, clerks, packers, engineers, and firemen, 385 moulders, 196 stove mounters, and the remainder nickel platers, tinsmiths, carpenters, blacksmiths, polishers, varnishers and tool-makers. The Bay State Shoe and Leather Company employ 307 men at shoemaking at 50 cents per day; Mahoney & Stern employ 138 men at laundry work at 60 cents per day. At Auburn, the Auburn collar company employ 65 men at making horse-collars at 50 cents per day; Dunn, Barber & Co., 101 men at shoemaking at 60 cents per day; Foxall, Jones & Co., 181 men at hollow-ware making, at 50 cents per day; Hayden & Smith, 118 men, in the manufacture of harness and plate, at 50 cents per day; Sheldon & Co., 225 men at 50 cents and 59 men at 60 cents per day, in the manufacture of axles. At Clinton, William Carroll & Co. employ 380 men at hat making at 40 cents per day.

The daily average number of hours' work at the three prisons for the past year did not exceed eight. General competition has not been invited in letting the labor of convicts. As the contracts have expired they have been renewed at an advanced price, 60 cents per day being the amount now obtained. When Capt. Pilsbury assumed charge of the prisons the price paid under contracts then existing was 40 cents per day. Capt. Pilsbury says if convict labor is to be abolished at all it should be in all states of the Union. For New York to stand alone in such action would be manifestly disadvantageous.

Crop Notes.

The Michigan State Crop Report for March has just been published. It includes returns from 1,041 crop correspondents, representing 750 townships. Six hundred and forty-nine of these returns are from 426 townships in the southern four tiers of counties. The estimates, almost without exception, show the condition of wheat, the condition of cattle and sheep and the prospect for apples and peaches better than one year ago. In only three counties—Alpena, Delta, and Gladwin—do the wheat prospects seem to be less promising. The total area in wheat in these counties in May, 1881, was only 821 acres. The condition of wheat in the southern four tiers of counties is estimated at from 12 per cent. better in St. Clair, to 141 per cent. better in St. Joseph County, where the crop in 1881 was almost a total failure. The average for the 28 counties in the southern four tiers is 43 per cent., and for the entire State 33 per cent., better than on March 1, 1881. In addition to the returns made by correspondents, reports have been received of the quantity of wheat marketed during the months of January and February at 431 elevators and flouring-mills, or about two-thirds of the whole number in the State. The whole number of bushels, as shown by the reports, is 2,885,235, of which 669,487 bushels were marketed in the first or southern tier of counties, 915,333 bushels in the second tier, 422,767 bushels in the third tier, 607,505 in the fourth tier, and 270,143 bushels in the remaining counties of the state. At 56 elevators and mills, or 13 per cent. of the whole number from which reports have been received, there was no wheat marketed during the months named.

The latest reports from Kansas indicate an unusually fine condition of the wheat crop throughout the Arkansas Valley. It has seldom been more promising at this time of the year. There have been no spells of alternate freezing and thawing, which usually do the most harm to the crop. The late cold snap has been of great benefit to the fruit prospect by retarding the bursting buds, so that they were not injured by the storm which followed. The late snow has gradually disappeared, and it gave the wheat a wonderful start. The winter has favored an early seeding, and much plowing has been done.

The agricultural situation in South Carolina is thus reviewed by the Charleston *News and Courier*: "An unusually large quantity of small grain has been sowed in every part of the state, and the weather has been such as to promise a yield that will fill the barns and furnish abundant support for man and beast. The oat crop is in fine condition in the Piedmont district, as well as in the middle country, and on the seaboard, and in six or eight weeks, with a continuance of good weather. the farmer will be in easier circumstances, This will be a great relief, as the purchases of Western corn have been a heavy drain upon the agriculturist. There will be too, a disposition to work strenuously to obtain good results in cotton, rice and corn. The intelligence given in the country newspapers concerning the small grain crop is fully confirmed by the advices received by the Charleston factors, who say that there is complete agreement in the statement about the area in cultivation and the condition of the crop."

The Murray Iron Works of Burlington, Iowa report business first rate. The demand for the "Howard" automatic cut-off engine is unprecedented and this style of engine gives great satisfaction.

News Items.

Milling is reported to be *very* dull in Minneapolis.

The Minneapolis operative millers have organized a mutual protection and benefit society.

Reports of damage to milling property in all parts of the country by high water have come in thick and fast.

The Eagle Milling Co. of Quincy, Ill., have ordered 40 sets of Stevens rolls of the John T. Noye Manufacturing Co.

New York state canal commissioners state that the New York canals will probably be open for business April 15th.

James A. Miller, formerly head miller in the Excelsior Mill at Minneapolis, is now on the road travelling for Edward P. Allis & Co.

W. Simmers of New Prague, Minn., has ordered 12 pair of Stevens rolls from the John T. Noye Manufacturing Co. of Buffalo, N. Y.

E. Hoag & Sons of Manchester, O., have ordered a Cosgrove roller-mill of the John T. Noye Manufacturing Co. of Buffalo, N. Y.

Richardson & Evans, of Indianapoliis, have ordered eight pair of Stevens rolls from the John T. Noye Manufacturing Co. of Buffalo, N. Y.

Died—March 21, 1882, Martin B. Medberry, aged 78. He was for many years one of the proprietors of the Empire mills in Milwaukee.

Messrs. John Fiechter, Son & Co. have purchased manufacturing property in Minneapolis and may now be said to be permanently located. They manufacture the Fir centrifugal reels and roller mills.

The Cockle Separator Manufacturing Co. of Milwaukee, Wis., have during the past month shipped a double-suction combined machine to South Russia, and also one to James Bruce, Timon, New Zealand. The demand for the machine is constantly on the increase. The company report numerous inquiries and orders in answer to their advertisements in the United States Miller.

Mr. Anton Kufeke, in his circular dated Liverpool, March 15, 1882, says:

The weather has now become quite spring-like and vegetation is making rapid strides, not only in these islands but all through northern Europe. The growing wheat-plant continues to be in splendid and very forward condition, and the prospects so far are most favorable. Farmers' deliveries of wheat are again on a decreased scale and the average price remains the same as last week, viz., 44s. 9d. against 42. 3d. at the corresponding week last year, and is virtually the same as in 1880, when it was 44s. 8d. per quarter.

The depressions under which the grain trade has been suffering for many years past, found its culminating point last Thursday, when some forced sales took place; but since then a steadier feeling has developed and no further decline in the values of flour has taken place. The business transacted in the interval has, however, been only small as regards foreign flour, as our local millers are getting the greatest share of what business there is passing.

Wheat sells more freely at last Friday's decline of 1d. per cental and some parcels are taken hold of by speculators for a rise. Oatmeal, dull and unchanged. Bran, rather lower to sell.

[*Continued from page* 85.]

not desired, one simply removes one of the gears of the roll shaft and the rolls run with equal velocity. The same can be done with smooth iron rolls producing a *flattening* effect, with no rubbing or flouring action and the result arrived at will be as good or bad as from metal rolls.

The chief object in grinding is to keep the product organically sound or of good baking quality. The fitness for baking does not depend so much on the percentage of gluten but it is necessary that during the process of grinding no condition should exist which may develop sporadic organisms, The percentage of gluten only determines the *method of baking* and the treatment of the dough. Flour containing only a small percentage of gluten is capable of giving good results when baked but it must be treated differently by the baker from a flour rich in gluten. A flour rich in gluten may become unfit for baking during the grinding process, where it has met with such conditions as cause those organic changes which should only take place during the process of baking,—when in short the formation of dough and fermentation take place during the process of grinding. Such developments take place in high temperatures accompanied by dampness—warmth and moisture being highly conducive to organic changes. Millers have therefore made their best efforts to grind cool and dry. This can easily be done by using porcelain rolls if attended to properly, much easier than with metal rolls for the former material is sharper and grittier than the latter and requires no extreme pressure in making flour and therefore tends to avoid heat by friction. The Russian writers referred to asserted that the product resulting from using chilled iron rollers was always cool as the friction between middlings and the smooth iron is only about half as great as between middlings and porcelain. They evidently have not considered their assertion for a miller would be regarded unenviably, should he assert that dull stones ground cooler than sharp ones because the friction of dull stones on middlings is less than of sharp ones. It is better to keep such astounding views very secret.

When the grinding surfaces are in operation, unless they come in contact with each other, there is no friction, which is only the result of uselessly expended power. The operation of porcelain rollers is in this respect to be judged exactly the same as millstones. The product is reduced between sharp surfaces. Heat is developed in grinding only when the "grip" fails, or when the surfaces of the stones or rollers run together. Porcelain rollers have, however, the advantage of stones, in that the "grip," the grinding quality, remains constant, while with stones it is worn away, and must be restored by frequent sharpening. Neither can hot grinding take place with porcelain rollers through want of sharpness, through dullness of the grinding surfaces. They can, however, run empty, and become heated by friction upon each other, whereby the particles composing the mass are set in oscillation, precisely as is the case with millstones. This is to be guarded against principally as a useless expenditure of power. As a safeguard against carelessness of the miller in attendance, Mr. Wegmann has recently added to his Victoria mill a device by which the rollers are automatically thrown apart whenever the feed fails and the rollers are in danger of running together. This device is very practical (I have had it in use for several weeks on a Victoria mill). It saves the rollers at the same time from unnecessary wear. An alarm signal can also be combined with this device.

[Translator's Remarks.—A frequent reason for the "heating" of porcelain rolls. I have found is in the insufficent care taken in keeping the rolls parallel. A pair of smooth rolls ought to be adjusted once a week. The finer the middlings are, that are to be ground on rolls, the greater is the necessity of keeping the roll bodies parallel to each other—*i. e.* keeping them "level"—for when they diverge in the least some fine dust middlings will pass unground and the miller will at first *increase the pressure*, to remedy the trouble of too great returns; the result will be, too close grinding along some distance of the grinding line causing some "caking" and even the roll-surfaces themselves will come in contact with each other causing "heating." The roller surfaces will commence to wear hollow if they are left in motion while in this condition for any length of time, and will quickly be in an unfit condition for grinding dust middlings even after they are leveled up. Porcelain rolls having more grit than iron, will wear out quicker and heat more than iron in case they are allowed to rub against each other, A careful miller will keep his machinery in order, paying as much attention to one as to the other but a careless miller will pronounce the porcelain rolls undurable and much inclined to wear away quickly while he will call the iron rolls indestructible. He can use iron rolls carelessly and they will not remind him so quickly of his lack of attention, as a porcelain roll will do. The porcelain rolls built in this country by Edw. P. Allis & Co. of Milwaukee are provided with mechanism by which a pair of rolls can be accurately leveled in five minutes.]

The cause of hot grinding is, however, only partially removed by this arrangement. Rollers, as well as millstones, are liable to run empty at the sides or in places, producing friction, which gives rise to constantly increasing heat. This is the result of imperfect regulation of the feed. This is the more liable to take place the more rapid the revolution of the rollers, the smoother their surfaces, and the stronger the pressure under which the rollers must be worked to produce the requisite adhesion. But if the erroneous idea is entertained that rollers may be run as fast as they can be driven—why even porcelain rollers cannot perform impossibilities. The feed failing to keep up with the too rapid motion of the rollers is not seized and drawn in, and the rollers consequently rub together and become heated. This fact cannot be too carefully considered. Porcelain rollers do not need to run rapidly. The Wegmann Victoria mill should make not more than 130, the small rollers not more than 160, revolutions per minute. The productive capacity is not thereby diminished, but on the contrary is actually increased. I have never had my porcelain rollers run warm. The advantage of rollers, that the product does not remain so long between the grinding surfaces as with millstones, and is therefore less exposed to possible injury from heating, is generally conceded, and is only mentioned for the sake of completeness.

It is not to be understood from these statements that fine flour cannot be produced without porcelain rollers, but only that this can be accomplished by the use of porcelain rollers alone, without further auxiliary means, and with the least expenditure of power. The Wegmann porcelain rollers with differential speed require no detacheurs or dismembrators. Even the idea that dressing machines are necessary is erroneous. With these porcelain rollers a completely developed light feathry product is obtained which can be perfectly bolted on the ordinary reel. The arrangement of dressing machines is indeed not suitable for much bolting. However, it amounts practically to a question of the construction of such machines which I will not pass over without notice.

Among all the roller machines constructed and purchased for special purposes in milling, the Wegmann machines, and especially the so-called Victoria mill, take a foremost place, because they are capable of the most universal application. With them all kinds of middlings, whether fine or coarse, hard or soft, may be ground, or if desired, a simple break may be made. If it were possible for the grain to be completely decorticated, which will probably ultimately be achieved, and if the decorticated wheat kernels could be treated as large middlings, the Wegmann Victoria mill would be able without the assistance of any other machinery, to make a perfect flour by the reduction of such decorticated grain. A complete milling equipment would then consist simply of a decorticating machine and a Victoria roller-mill. With the cuticle of the grain romoved it is self-evident that the entire process of reduction to middlings by means of corrugated rollers is superfluous, as the main object of sharp corrugations on the smooth surface is to prevent the reduction of the bran and its mixture with the flour. But even without reference to this anticipation of decorticated wheat, (which, moreover, I can only technically assent to) this universal applicability of porcelain rolle s makes them especially desirable, as one willingly curtails the "complete system" which is necessary when only cast-iron rollers are used, to make a fine flour. Porcelain rollers require no "complete system," and therefore can be used to advantage in any mill. They comprehend in themselves every existing milling system or even more, every porcelain roller mill represents in itself a complete system capable of making any required reduction. This is a consideration to which, in the interest of the majority of mill owners too much attention can not be given. Not all millers are able to provide themselves with a "complete system" of rollers. To do this requires a large business and a larger purse. We cannot all have large mills; of these there are already too many. The small mills are also entitled to existence and wish also to be in a condition to compete with others. Not every one is able and willing to entirely rebuild his mill. The porcelain rollers exactly answer to the requirements of such. They reduce the middlings to flour equally well whether these are made by millstones, corrugated rollers or other means. The better and cleaner the middlings the better the flour made from them, but in any case it is better than if made with millstones. The improvement lies in this, the possibility that every miller by the use of porcelain roller mills can perfect his system and improve his product. It is even no art for the smallest miller to make "Kaiser-Auszug" with the help of porcelain roller mills.

I hope by this exposition to have justly presented the views on milling with rollers, and especially, the use of Wegmann's porcelain rollers according to different sides.

There still remain two words for me to say: The first concerns the strength of the porcelain rollers, which has very recently been called in question; the other the expressions of distrust in allusion to "claims" which are constantly appearing.

The strength of the porcelain rollers and their fastening is sufficiently attested by the operation of more than 20,000 rollers. The fastening of the cylinder to the shaft is effected in the manufactory by special pressure apparatus with such accuracy that they cannot fail to hold except in case the screw employed for this purpose is loosened by a prying miller to gratify an unnecessary curiosity, and is not to be attributed to any defect in the apparatus employed in the manufactory.

It has been asserted that for no invention have more claims been made than for porcelain rolls, and the inference can be drawn therefrom that no milling invention has been of so great service to the milling art. This is simply *truth!*

NEWS.

Everybody Reads This.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

Burned—Bodenheimer & Wright's flour mill, at Fillmore, Ind.

Burned—C. Kronschnabel's mill at Benton, Minn. Insured.

Corn-meal is sold at Brenham, Texas, for three cents per pound.

Smiley & Lisson, of Lakeville, Minn., have sold their mill to John Stauffer.

F. C. Trabine, of Beaver, Greene Co., Ohio, is building a 200-barrel roller mill.

A. G. Morobray, of the Winona Mill Co., of Winona, Minn., is sick with varioloid.

Shuler & Co. of Minneapolis recently sold 29 sets of Stevens' roller-mills in one day.

Moses Shantz & Son, of Berlin, Ontario, have just retired from the milling business.

Eighty-five turbine water-wheels run the mills and factories on the Neenah and Menasha water-power.

Crocker, Fisk & Co., of Minneapolis, have concluded not to rebuild their mill which was burned Dec. 4, 1881.

Stokes, Bros.' mill at Janesville, Minn., which has just started up, now has a capacity of 125 barrels per day.

Kipper & Wallace, of Sedalia, Mo., have dissolved partnership. John C. Kipper will continue the business.

Bemis, Bros. & Co., the St. Louis bag manufacturers, will build a large salesroem in Minneapolis this year.

The Mount Pulaski Milling Co. at Mount Pulaski, Ill., will start up their new gradual-reduction mill very soon.

W. P. Evans' newly remodeled roller mill at Malvern, Pa., is running full time and turning out excellent work.

Edward P. Allis & Co. are putting in four sets of Gray's corrugated rolls in D. L. Wing & Co.'s mill at Litchfield, Ill.

Orson. Toncray of Brighton, Mich., has bought out his brother's interest in the flour-mill there and runs it alone.

The new half of the great Pillsbury A mill has been fitted up with its machinery and will soon be in running order.

Edward P. Allis & Co., of Milwaukee have lately shipped four of their double 9x24 roller-machines to Wing & Co., of Litchfield, Ill., and three of same size to the Park mill, St. Louis.

The Los Gatos Milling Co. of Los Gatos, Cal., shipped, March 2d, 1,212 barrels of flour to Liverpool via San Francisco.

Weizel Bros. & Scott of Anoka, Minn., have dissolved partnership. Weizel Bros. coutinue the milling business.

Ex-Gov. Washburn, the Minneapolis mill owner, is at Hot Springs, Ark., and his health is said to be rapidly improving.

Roberts & Perkins will double the capacity of their mill at Fargo, D. T., this season, making a 350 barrel-roller mill of it.

Frost & CO., of Oriskany Falls, N. Y., are putting in Gray's roller-mills, and will soon have a neat 100-barrel mill in operation.

Eastern millers report business generally from fair to good. They are making more money, as a class, than Western millers.

The New York & New England Railroad Co. have just completed an elevator in Boston having a storage capacity of 520,000 bushels

Kansas City elevators handled nearly 5,000,000 bushels of wheat during the year 1881, and about 4,000,000 bushels of other grains.

Messrs. Farley, Christy & Co., are now building one of the largest oat meal mills in the United States. It will be completed in July.

Martindale & Schultz of Burlington, Kans., have lately bought a Becker Brush from the Eureka Manufacturing Co. of Rock Falls, Ill.

The Kenton Paper Co. of Kenton, Ohio, have ordered two large Reynolds' Corliss engines from Edward P. Allis & Co., Milwaukee.

March 14, a boiler in Joseph Brucker's mill at Dorchester, Wis., exploded, demolishing the mill and seriously injuring two employes.

E. P. Allis & Co. are now making plans for the erection of a 1,500 barrel mill with Gray's roller system for Hon. George Bain of St. Louis, Mo.

Burned.—The Vance flouring mills situated in Venice, Ill., owned by Kehlor Bros., of St. Louis, burned March 11. Loss $30,000. Insured for $16,500.

Pittsburgh, Pa., has a new roller flour mill in operation. It is owned by B. F. Veach and is located at 335 Liberty Street. It is doing a fine business.

The well-known milling and mill furnishing firm of Stephen Hughes & Co. of Hamilton, O. have become incorporated as the "Stephen Hughes Manufacturing Co."

J. B. A. Kern, proprietor of the Eagle Mills, Milwaukee, purchased during the month, 40,000 bushels of wheat in St. Louis to be made into flour in his mills.

The six New England States consume some twenty million bushels of wheat, while the wheat product of these states scarcely reaches one-and-a-quarter million bushels.

G. E. Allinger, of Port Jefferson, Ohio, has improved his cleaning machinery and is happy in the use of a Becker brush from the Eureka Manufacturing Co. of Rock Falls, Ill.

The Janesville, (Wis.) cotton-mills have recently been entirely destroyed by fire. Loss, $30,000. Insurance, $17,000. Janesville manufacturing institutions have suffered severely by fire during the past year.

The water in many of the rivers in Maine has recently been higher than at any time since 1874. It seems as if there was going to be another deluge judging by the reports from almost all parts of the country.

The wheat area in Illinois is reported by the State Board of Agriculture as 285,000 acres less than last year, or about 9½ per cent. The condition of the crop is unusually favorable in all of the divisions of the State.

Edward P. Allis & Co. are rebuilding Kaufmann's mill at Bethalto, Ill., making it a 600-barrel roller-mill on the Gray system. Gray's roller-mills are also being put into Kaufmann's "Park Mill" in St. Louis.

A well known planter and miller in Mississippi says that money is close and times hard, but that the citizens are striving to economize and look hopefully to the near future when the crops for 1882 shall be harvested.

Mr. John Hurd, of Marshall, Mich., has lately started his new roller-mill, and reports the most satisfactory results on the soft winter wheat, with choicest flours and a yield of four bushels to the barrel. He uses Gray's patent noiseless rolls. Edward P. Allis & Co., of Milwaukee, designed and built the mill.

JOHN EMMERT & Co. of Greensburgh, Ind., are changing their mill to the roller system. They have adopted the Allis system and will use Gray's patent noiseless roller machines exclusively. Edward P. Allis & Co., Milwaukee, Wis., have the contract.

C. H. BROWN & SONS of Dakota, Iowa, and J. Webber Adams, of Freeport, Ill., have lately bought the Galt combined brush and smutter, and write us that they are well pleased and that their flour has been much improved by its use. This machine is made by the Eureka Manufacturing Co. of Rock Falls, Ill.

THE "Simmons Mill," at Kenosha, Wis., has been entirely remodeled to the roller system by E. P. Allis & Co., of Milwaukee. Gray's Roller Mills are used. The mill now has a capacity of 175 barrels per day. It is driven by steam power. It is operated by Messrs. Simmons & Dickson.

A. K. WILLIAMS, of Minneapolis, Minn., has patented an invention for transporting grain through pipe-lines by atmospheric pressure. Mr. Williams will have to raise considerable wind to transport the wheat crop of the Northwest to the seaboard if he ever puts his pipe-lines in operation.

MESSRS. SHATTO & DEPNIS, of Minneapolis, Minn., have accepted the general agency for the Northwest for the celebrated Atlas Corliss and Slide Valve Engine, built by the Atlas Engine Works, Indianapolis, Ind. They are doing a booming business and keep a full supply of engines on hand for immediate delivery.

MESSRS MANNING, MAXWELL & MOORE, No. 111 Liberty Street, New York, dealers in railway and machinists tools and supplies, will soon issue a new catalogue of all the line of specialties they deal in and would be pleased to receive from manufacturers duplicate lists of their goods. They will send for electrotypes later.

THOMAS GALLAHER of the Pillsbury A mill recently fell a distance of 27 feet into the wheel-pit, striking his head against solid masonry at the bottom. He does not appear to be injured much. The lantern which he held in his hand while falling was not broken. Some of these millers are composed of substantial material.

THE Milwaukee Cement Works have begun working three months earlier this year than last. They have doubled the kiln capacity and are grinding for the coming season, so that when in full blast 1200 barrels per day can be made. One order alone, for the construction of the railroad bridge at Minneapolis is for 35,000 barrels.

COMMISSIONER HENDERSON, of the Atlanta Ga., says that during the present year there will be generally a greater variety of food crops raised. The planters have discovered that they have made a serious mistake in making cotton almost their entire crop. It is estimated that 54 per cent of their force products for man and beast were brought from other states.

C. W. BONNIWELL'S mill at Waverly, Minn., was burned recently. His loss amounted to about $10,000, on which he had an insurance of $4,000. He will rebuild at once, in the latest style, a mill of about 100 barrels capacity per day. He is desirous of hearing from mill-furnishers as soon as possible before he gets his plans made out.

THE "Victor Roller Mills," at Ottawa, Ill., owned by Messrs. Cotton, Dawall & Hamilton, have recently been finished and have started up. It is driven by water power and has a capacity of 250 barrels per day. It is fitted up with the Stevens Roller Mills and the plans and designs and machinery were made by the Jno. T. Noye Manufacturing Co., of Buffalo, N. Y.

THE Atlas Engine Works, of Indianapolis, Ind., are crowded with orders, and have shipped engines recently at the rate of one hundred per month. Shipment was made one day last week of two large engines, one going to Portland, Me., for a locomotive works, and the one to Ouray County, Col., for the Brooklyn & San Miguel Mining and Reduction Co.

EDWARD P. ALLIS & Co. have lately started the large pumping engine they have built for the city of Milwaukee. The engine is a Reynolds' Corliss compound condensing, and will give a duty of 100 million foot pounds. Its capacity is twelve million gallons per day, 150 feet high. It was run up to a sixteen million capacity with perfect ease. It will be at once placed on regular duty.

WILLIAM MCLEAN, ESQ. of the Richmond Manufacturing Co. of Lockport, N. Y., has been lying dangerously ill with inflammation of the lungs at the Nicollet House, in Minneapolis. At latest accounts, however, he was much improved and was thought to be in a fair way to recover. His brother has been summoned to his bedside, and if care and attention will save him, his many friends will soon see him about again.

SOUTHERN ILLINOIS suffered last year from drouth and now they are suffering greatly from floods. A correspondent from McLeansboro, Ill., says that usually a considerable quantity of grain is shipped from that place, but since harvest time last year, not a single car has been shipped, but that 79 carloads has been received for the consumption of the citizens of that place.

DURING the year 1881, Kansas produced 19,164,896 bushels of winter wheat and 1,314,793 bushels of spring wheat. The corn crop amounted to 80,760,542 bushels; oats, 9,900,768; rye, 986,5 8 bushels; barley, 110,125 bushels and buckwheat, 58,621 bushels. These figures are furnished by Mr. David Kelso, of Parsons, Kan., who is Land Commissioner of the Missouri Pacific Railway.

JOSEPH BUCHER of Columbus, Neb.; C. C. Risk of Mount Pleasant, Iowa; Geo. Shimpton, Columbus City, Neb.; L. B. Weisenburg, Georgetown, Ky.; Knowles & Son, Seneca, Kans., and Lewis Kamp, of Mount Carmel, Ill., after looking around for the best brush-machine, have bought the Becker brush made by the Eureka Manufacturing Co. of Rock Falls, Ill., and are more than pleased with the way it cleans wheat.

BURNED, March 23, 1882, Haven & Co's flouring mill and Werner & Cole's elevator at Leavenworth, Kan. Loss including 20,000 bushels of wheat and 12,000 barrels of flour estimated at $60,000. Insurance $50,000. The mill will probably be rebuilt at once on the latest improved gradual reduction plan by Messrs. Werner, Cole & Havens. Mr. Havens and two employees were injured during the fire quite seriously.

CHISHOLM BROTHERS have just started a new mill on the Jonathan Mills system for the Grundy County Milling Co., at Grundy Centre, Ia., and another for Witherspoon & Barr, at Princeton, Ind.; besides a third for Sooy, Brinckman & Roberts, Great Bend, Kan. The last was a fourth for Bridges & Johnson, Crete, Neb. All of these parties state that they are perfectly satisfied with the working of the system.

A LARGE STEEL SAILING SHIP.—On the 8th was launched from Messrs. Harland and Wolff's building yard, Belfast, a ship which is said to be the largest sailing vessel ever constructed of steel. She is named the *Garfield*, after the late President of the United States. The *Garfield*, which is of 2,220 tons register, is 292 ft. in length, 24ft. 9in. in depth and 41 ft. breadth. She has been built for Messrs. Ismay, Imrie & Co., of the White Star Line, and is intended for the Australian and Californian trades.

THE Chicago Packers Hoop Company, about being organized, contemplate the placing of new machinery for splitting and dressing half round bark hoops for packers and millers at Chicago, Rockford, Sterling, Rock Falls, Quincy, Alton or East St. Louis and at Belleville, Cairo, Centralia and other points in Southern Illinois convenient to millers and coopers and accessible to hoop timber districts. The machinery controlled by the company is of recent invention and is one of the most remarkable labor saving inventions known. It promises to revolutionize an industry equally important to the farmer the packer and the miller throughout the state.

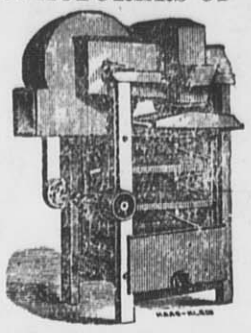
GIBSON & Co.'s mill B., in Indianapolis, Ind., which has been running constantly since 1876 as a buhr mill, has recently been changed to a complete 500 barrel roller mill, and at the same time all the machinery, bolting and purifying apparatus has been refitted and rearranged. The following is a short description of the mill: The wheat is operated upon successively by a Richmond separator, a combined Richmond brush and beater and a Becker brush, after which it is graded into three grades as to size, which facilitates the operations of the first break machines in their work of exactly dividing or splitting the wheat. The reduction machinery, which consists of twenty-eight double Gray roller machines, is placed on the grinding floor in three parallel lines, and is all driven from the same line shaft in the basement. Fifteen of these machines operate on the wheat in six successive breaks. Nine, which are of smooth iron and porcelain, reduce the middlings in four breaks, while the remaining four are for sizings, tailings, soft stocks and "red dog." The bolting and purifying is done on six scalpers, 28 reels and 10 purifiers, arranged according to a system of bolting and purifying devised by Mr. Louis H. Gibson, who is also the inventor of a grinding machine, consisting of a combination of sieves and aspirators which separate all of the soft and branny matter from the middlings, before going to the purifiers. These machines operate so successfully that further purification for all middlings coarser than those going through a No. 14 cloth is unnecessary, and little work is left for the purifiers on the fine middlings. The tailings are purified by Gray aspirators, and the fine and sizings middlings by La Croix machines. We do not care to indulge in the gush ordinarely used in describing new mills, but will simply say that the product of flour in quality and quantity is entirely satisfactory to the owners. Of the low grade there is about 6 per cent. which is known as "St. Louis Extra." As to the bran, it is finished.

The mill was planned and arranged, and the machinery selected by Mr. Louis H. Gibson, the superintendent, and the millwright work executed under his direction by Mr. T. M. Wilson.

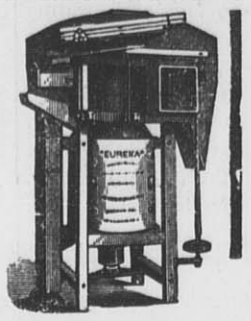
HOWES, BABCOCK & EWELL,

Established 1856. **Silver Creek, Chautauqua County, N. Y.** Established 1856.

MANUFACTURERS OF THE WORLD-RENOWNED EUREKA GRAIN CLEANING MACHINERY AND SPECIALTIES HEREWITH ILLUSTRATED.

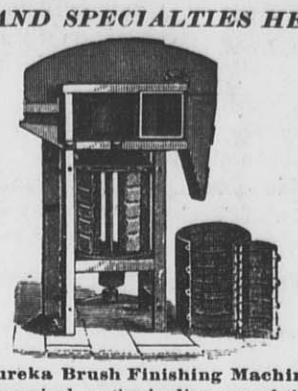


The Eureka Separator
occupies but little space, does its work in an effectual manner. *Is also built for use in Elevators and Warehouses, with a capacity of from 100 to 1,000 bushels per hour.*

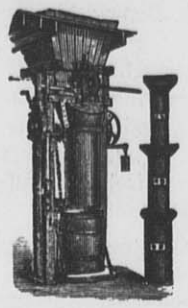


The Eureka Smut and Separating Machine,
A combined Smut and Separating Machine, having thorough ventilation. *Over 14,000 of these Machines are now in use.*

Eureka Magnetic Automatic Separator.
Removes all metallic particles from a flowing stream of grain, requiring no attention from the miller. 5 sizes.



Eureka Brush Finishing Machine
Recognized as the leading one of this class of machines. Universally recommended for finishing the process of cleaning.



Silver Creek Flour Packer.
Will pack whole and half barrels, and half, quarter, eighth and sixteenth barrel sacks Provided with labor-saving patent creveling steel coil spring regulating the packing to perfection.

GENUINE DUFOUR AND ANCHOR BRAND BOLTING CLOTHS. FULL STOCK ALWAYS ON HAND, MADE UP BY THE AID OF OUR OWN PATENTED ATTACHMENTS, IN A SUPERIOR MANNER.

Office and Warehouse in England, **16 MARK LANE, LONDON. E. C.** Gen. Agency for Australian Colonies & New Zealand, **THOS. TYSON, MELBOURNE, VICTORIA.**

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PRACTICAL HINTS

—ON—

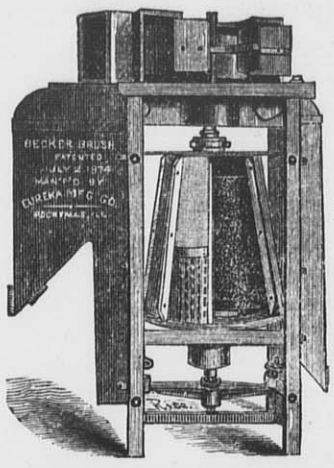
Mill Building.

The Latest, Best and Only Exclusively Flour Mill Work in Print.

Every Miller, Millwright and Millwright's Apprentice should have a copy.

THE UNITED STATES MILLER for one year and a copy of this book will be sent for $1 00, Address,

UNITED STATES MILLER,
Milwaukee, Wis.



BECKER BRUSH.

EUREKA MANUFACTURING CO.,

Manufacturers and Sole Proprietors of the

BECKER BRUSH,

—AND—

Galt's Combined Smut and Brush Machine.

The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best.

ADJUSTABLE WHILE IN MOTION.

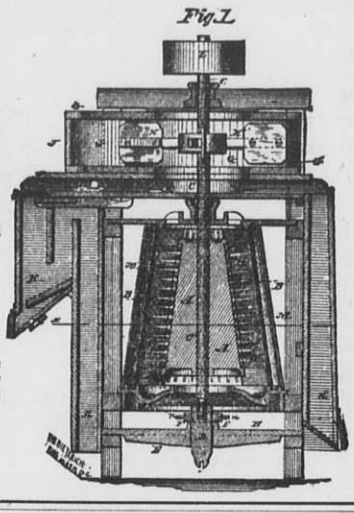
Nearly 1,000 of these Machines in Use.

In the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

EUREKA MANF'G CO., ROCK FALLS, ILL., U. S. A.

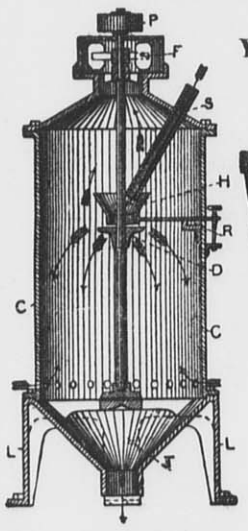
[Mention this paper when you write.]

Fig. 1.



Galt's Combined Brush and Scourer.

Millers, Attention!



You can successfully purify the chop from either Stone or Rolls with the

Wheat Meal Purifier.

Satisfaction Guaranteed or No Sale.

THIRTY DAYS' TRIAL.

Send for circular and full particulars to

Wheat Meal Purifier Co.,

Academy of Music, MINNEAPOLIS, MINN.

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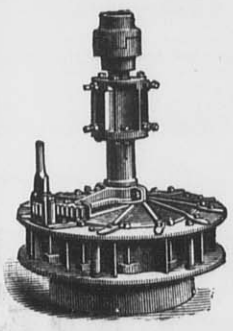


POOLE & HUNT'S
Leffel Turbine Water Wheel

Made of best materials and in best style of workmanship.

Machine Molded Mill Gearing

From 1 to 20 feet diameter, of any desired face or pitch molded by our own SPECIAL MACHINERY. **Shafting, Pulleys, and Hangers,** of the latest and most improved designs.

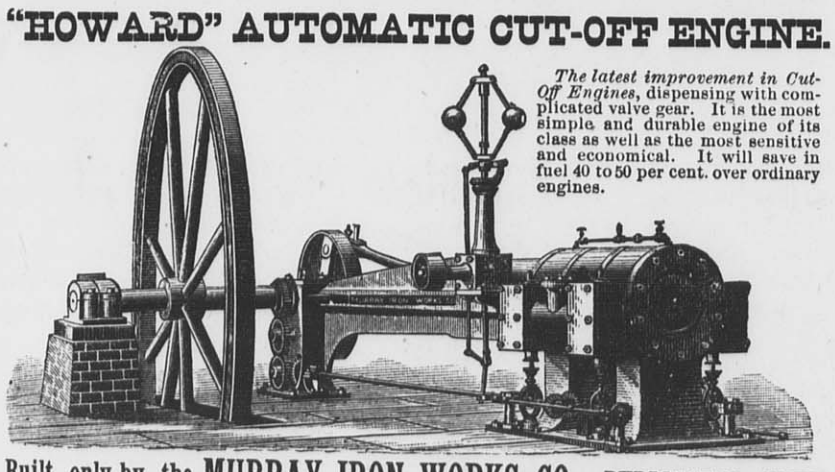
Mixers and General Outfit for Fertilizer Works.

☞ **Shipping Facilities the Best in all Directions**

POOLE & HUNT, Baltimore, Md.

N. B.—Special attention given to Heavy Gearing for Pulp and Paper Mills.

"HOWARD" AUTOMATIC CUT-OFF ENGINE.



The latest improvement in Cut-Off Engines, dispensing with complicated valve gear. It is the most simple and durable engine of its class as well as the most sensitive and economical. It will save in fuel 40 to 50 per cent. over ordinary engines.

Built only by the **MURRAY IRON WORKS CO., BURLINGTON, IOWA.**

BUILDERS OF ALL KINDS OF ENGINES AND MACHINERY.

CAWKER'S

AMERICAN FLOUR MILL DIRECTORY
FOR 1882:

Is Now Ready for Delivery, February 1st, 1882.

It has been compiled with the utmost care, and contains 22,844 Addresses

Of Flour Mill Owners in the UNITED STATES and CANADA.

It give the **Capacity and Motive Power** of Mills wherever obtained.

MILL FURNISHERS, FLOUR BROKERS,

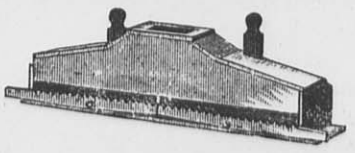
And Every one Desiring to Reach the Trade,
WILL FIND THIS WORK SIMPLY INVALUABLE.

PRICE, TEN DOLLARS PER COPY.

Address THE UNITED STATES MILLER, Milwaukee, Wis.

☞ **Will be sent to any part of the world by Mail, REGISTERED, on Receipt of Price.** ☜

The Perfect Feed Box.



It insures a perfectly even distribution of the middlings over the entire width of the cloth. Every miller will appreciate this. Fits all purifiers. Address,

CASE MANUFACTURING CO.,
COLUMBUS, OHIO.

W. E. CATLIN & CO., 68 LAKE ST., CHICAGO, ILL., AGENTS.

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MEDAL & PREMIUM AWARDED TO

ALCOTT'S TURBINE WATER WHEELS

Most Perfect Turbine in Use.

MANUFACTURERS OF

Circular Saw Mills, Shafting, Pulleys, Hangers & General Mill Machinery,

Stating Particulars of Stream, &c.

Address: **T. C. ALCOTT & SON,**
Mount Holly, N. J.

We have the BEST GATE in EXISTENCE and by it the Most Direct Efficient Applications of the Water to the Wheel.

The Weel is STRONG, DURABLE AND EFFECTIVE. Unsurpassed in Power at "part gate." Warranted to give full satisfaction.

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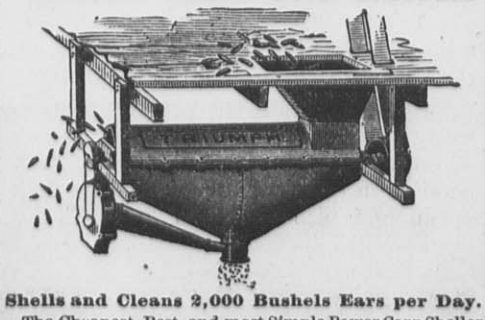
TRIUMPH POWER CORN SHELLER.



Shells and Cleans 2,000 Bushels Ears per Day.

The Cheapest, Best, and most Simple Power Corn Sheller in use. Send for Circular and Price List.

Manufacturers of Steam Engines, Mill Builders and Mill Furnishers.

HULBERT & PAIGE, Painesville, Ohio.

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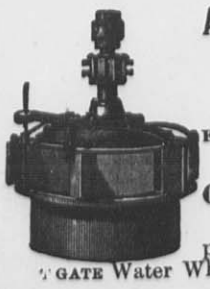
Stout, Mills & Temple,

DAYTON, - - - OHIO.

MANUFACTURERS OF THE



American Turbine Water Wheel,

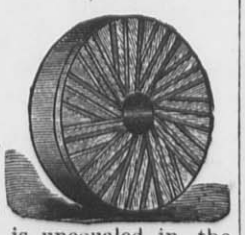
Best Quality French BURR MILLSTONES.

Sole Agents in Dayton for the sale of

DU FOUR & CO'S CELEBRATED BOLTING CLOTHS.

Flour and Paper Mill Machinery, Best Chilled or Porcelain Rolls for Crushing Wheat and Middlings and

GENERAL MILL FURNISHINGS.



The AMERICAN TURBINE, as recently improved, is unequaled in the power utilized from a given quantity of water, and is decidedly the BEST GATE Water Wheel ever known. It has also been otherwise greatly improved.

☞ **Large Illustrated Catalogue Sent Free on Application.** ☜

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FOR SALE.

A good water power and mill with two run of stone a Stone Bank, Waukesha County, Wis. Mill is doing a good business, which with a moderate amount of improvements, could be largely increased. One half or the whole will be sold to the right party. For full particulars, address, U. S. MILLER, Milwaukee, Wis.

WEGMANN'S PATENT

PORCELAIN ROLLS

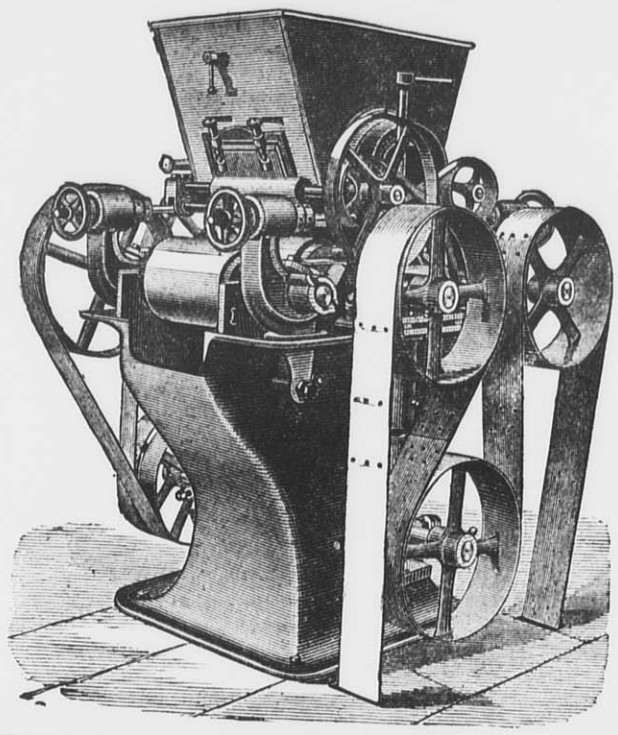
THE BEST ROLL

FOR

MIDDLINGS

IN THE

WORLD!



THE BEST ROLL

FOR

MIDDLINGS

IN THE

WORLD!

"AWARDED SPCIAL PREMIUMS."

OVER 6,000 OF THESE ROLLS IN USE

IN THIS COUNTRY AND EUROPE

The Superority of Porcelain over Chilled Iron for Reducing Middlings for Tailings is as under:

CHILLED IRON ROLLS, whether polished at first or scratched with fine grooves, soon become, through wear, smooth and glassy, and will only squeeze instead of grinding.

PORCELAIN presents a continual inherent sharpness, which no art can give to any other material in equal fineness and regularity, which enables it to act upon the smallest particles of flour and to separate them.

CHILLED IRON discolors the flour, by reason of the carbon that exudes from it, and also by its liability to rust.

PORCELAIN does NOT discolor the flour and is entirely indifferent to any and all chemical influences.

CHILLED IRON ROLLS are smooth and "cake" the meal; more especially is this the case on soft material.

PORCELAIN ROLLS possess a certain porosity, and no matter how finely ground, or how long they have been used, still retain this granular and porous texture, and will reduce the middlings without "caking"

CHILLED IRON can be cut with steel.

PORCELAIN can ONLY be cut by the best black diamonds.

CHILLED IRON ROLLS require great power to reduce middlings to the proper fineness on account of their smooth surface.

PORCELAIN ROLLS will do the same amount of work, on account of the slight pressure required, and the gritty nature of the Porcelain, with one-half the power. The flour produced by Porcelain Rolls is sharper, whiter, stronger and more even than that produced by Iron Rolls.

No remarks need be made as to the superiority of Porcelain Rollers over Millstones, as it is a recognized fact by all. Porcelain Rollers are the only Rollers that will entirely supercede Millstones and Metal Rollers.

THESE MACHINES RECEIVED the FIRST PREMIUM!

At the late Millers' International Exhi bition, Cincinnati.

Gold Medals at Nuremburg, 1876; Paris International Exhibition, 1878; Lille International Concours, 1879; First Gold Medal of the State, Berlin International Exhibition of the German Millers' Association, July, 1879; and Gold Medal Le Mans, 1880.

Full Instructions regarding the system of using Rolls in place of Stones given to parties purchasing. Address

EDW. P. ALLIS & CO., Sole Mfr's.

MILWAUKEE, WISCONSIN, U. S. A.

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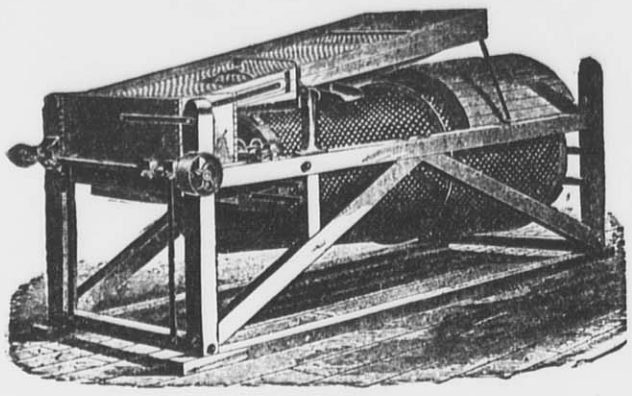
COCKLE SEPARATOR MANUFACTURING CO., MILWAUKEE,



PLAIN COCKLE MACHINE.

GENERAL MILL FURNISHERS

AND MANUFACTURERS OF

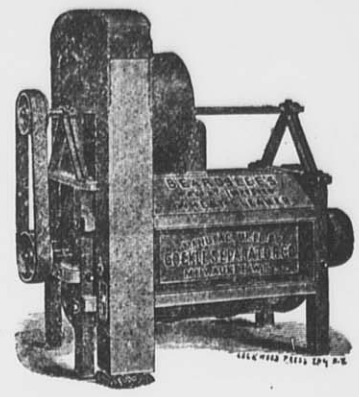
IMPROVED COCKLE SEPARATORS

(Kurth's Patent,) Also built in combination with

Richardson's Dustless Wheat Separators!

Also Sole Manufacturer of BEARDSLEE'S PAT. GRAIN CLEANER

☞ We will contract to furnish entire Wheat Cleaning Machinery for mills, and guarantee the best results.



BEARDSLEE'S WHEAT CLEANER.

Perforated Zinc at Bottom Figures. **Send for Illustrated Catalogue.**

We GUARANTEE GREAT CAPACITY combined with GOOD QUALITY OF WORK. Any common Sieve will separate the cockle from wheat but to separate it WITHOUT WASTE is the GREATEST FEATURE of our Machine. A WASTEFUL machine is a DAILY LOSS OF MONEY in a mill. There is NO MACHINE IN THE MARKET which can stand comparison with ours.

Carbondale, Ill., 2, 1881.
Cockle Separator Mfg. Co., Milwaukee.
Gentlemen: Replying to your late favor, would say that we can cheerfully recomend your Cockle Separator as doing all that you claim for it We have tested ours throughly by this time and know whereof we speak. We would not think of doing without it, having tried it once, and can conscientiously vouch for its goop work.
Yours respectfully,
BROWN & WINFREY.

Perrysville, Idd., Nov. 24, 1881.
Cockle Separator Mfg. Co., Milwaukee.
Sirs:—The combined machine I bought of you has been running about three weeks. It certainly does all you claim for it, and is the most perfect Separator that I have any knowledge of.
Yours respectfully,
B. O. CARPENTER.

Hixton, Jackson Co., Wis., Dec. 30, '81
Cockle Separator Mfg. Co., Milwaukee.
Gents:—In answer to your inquiry of the 28th inst., I would say that the combined machine I bought of you last summer, works to my entire satisfaction. Respectfully yours,
W. T. PRICE,
per D. G. THOMAS.

P. S—I have been milling now for twenty-seven years, but never have I seen anything that will equal yours in cleaning wheat.
As an Oat Separator it is No. 1, and for Cockle it cannot be beat. I can take screenings and separate the cockle from it without wasting any of the small wheat. In my opinion every mill in the United States ought to have one, and if I were to build a mill I would have no other. I remain
Yours, etc. D. G. THOMAS.

Minneapolis, Minn. Aug. 22, 1881.
Cockle Separator Mfg. Co.:
We have been using two of Beardslees's wheat cleaners, a scourer and finisher, for nearly two years, and are passing one hundred and fifty bushels per hour through them, one third more than rated capacity, and are not using any other cleaners, and consider our wheat as well cleaned as any in Minneapolis.
Yours truly,
CAHILL, FLETCHER & CO.

La Crosse, Wis., July 30, 1881.
Cockle Separator Mfg. Co., Milwaukee.
Gentlemen:—The Beardslee Grain Cleaner sent me about the middle of June has been in operation since that time with very satisfactory results. I cannot see that it breaks the wheat or requires an unusual amount of power to run it. Yours truly,
WILLIAM LISTMAN.

Milwaukee, Wis., Aug. 23, 1881.
Cockle Separator Mfg. Co.
Gentlemen:—The Beardslee's Grain Cleaners which we have purchased from you for our New Era and Milwaukee Mills give us the best of satisfaction. Experienced millers having seen the work done by the machine agree with us, that it cannot be beat. You are at liberty to use our names as a reference, and any party calling on us we will be pleased to show the machine in operation, Yours truly,
NEW ERA MILLING CO.

Pott's Patent Automatic Feeder! The best device for regulating the FEED ON ROLLER MILLS, PURIFIERS, and other machines requiring a regular feed, spread out the full width, Very cheap and simple. Sent on trial upon application. Write for circulars with illustrations. Perforated Zinc of all sizes at low rates. Send for Illustrated Catalogue.

STEEL CASTINGS

FROM 1-4 to 10,000 LBS. WEIGHT.

True to pattern, sound and solid, of unequaled strength, toughness and durability.
An invaluable substitute for forgings or cast iron requiring threefold strength.
Gearing of all kinds, Shoes, Dies, Hammer-Heads, Cross-Heads for Locomotives, etc.
15,000 Crank Shafts and 10,000 Gear Wheels of this steel now running prove its superiority over all other steel castings.
CRANK SHAFTS, CROSS-HEADS and GEARING, specialties.
Circulars and price list free. Address

CHESTER STEEL CASTINGS CO.,
407 LIBERTY ST., PHILADELPHIA, U. S. A.

Works, CHESTER, PA.
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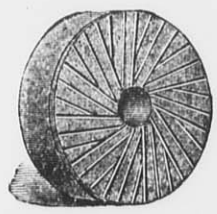
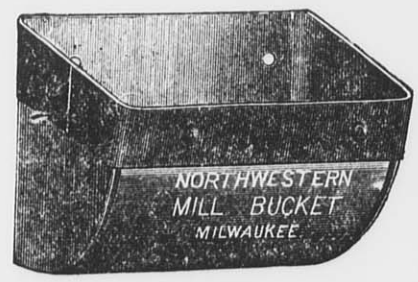


Mill Furnishing, Foundrymen & Machinists.
Established 1851.
MANUFACTURE
MILL STONES.
Flouring Mill Contractors.
Send for Pamphlet.
Nordyke & Marmon Co
Indianapolis, Ind.

[Mention this paper when you write us.]

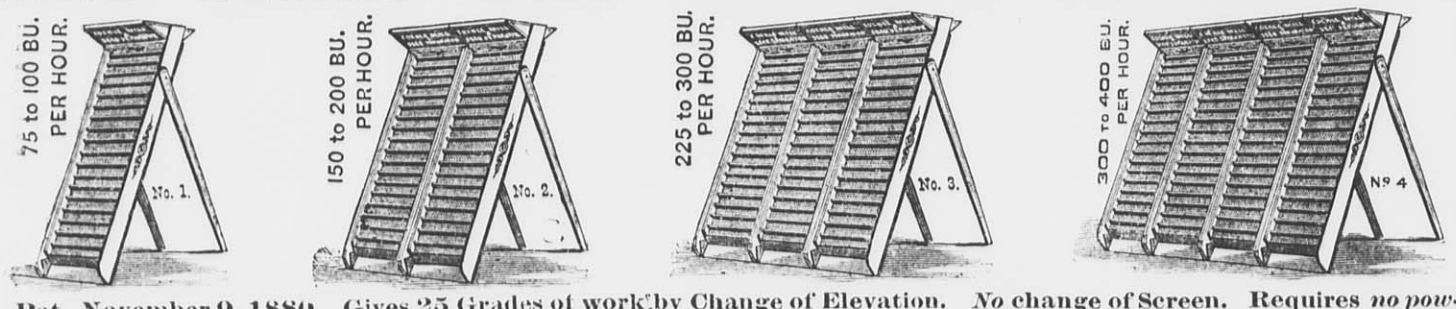
Northwestern Mill Bucket Manufactory

310, 312, and 314 FLORIDA STREET.



Is furnishing Mills and Elevators in all parts of the country with their superior BUCKETS.
They are UNEQUALED for their SHAPE, STRENGTH and CHEAPNESS.
Leather, Rubber, Canvas Belting and Bolts at lowest market rates. We have no traveling agents. Sample Buckets sent on application. Large orders will receive liberal discounts. Send for sample order.
Address all inquiries and orders to
L. J. MUELLER, 197 Reed St., Milwaukee, Wis..
[Mention this paper when you write us.]

KING COCKLE MILL AND SEED SEPARATOR!



Pat. November 9, 1880. Gives 25 Grades of work by Change of Elevation. *No* change of Screen. Requires *no power*. When used in Connection with Kurth Cockle Mill your cleaning capacity is more than Doubled. When used alone you have more Merit for the money than in any device yet invented. Write for circulars to La Du & King, Manufacturers, Rochester, Minnesota.

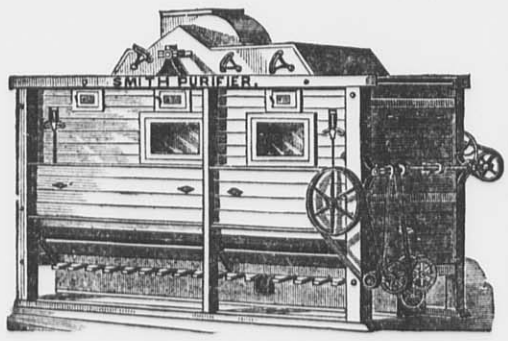
Low in Price!

Quantity and Quality of Work Considered.

LICENSED

Under ALL Patents owned by the Consolidated Middlings Purifier Co.

SIMPLE, EASILY ADJUSTED.



Adapted to all Systems

Of Milling and Every Grade and Condition of Middlings.

FOURTEEN SIZES,

SINGLE, DOUBLE AND SPECIAL MACHINES.

DURABLE, LIGHT RUNNING.

TWO THOUSAND SMITH PURIFIERS WERE SOLD IN 1881.

More than FOUR THOUSAND now Running in the United States.

The Smith Purifier Is in Use in Every Milling Country in the World.
Has GRADED, CONTROLLABLE AIR CURRENTS.
Has a POSITIVE AND EFFICIENT means of cleaning the Silk of the Sieve.

It is Impossible to do Good and Economical Work without these Features.

OUR CLOTH TIGHTENER makes it both Easy and Convenient to keep the Silk always properly stretched.
OUR AUTOMATIC FEED is Positively SELF-ADJUSTING and RELIABLE.

Write for Descriptive Circular and Price List to

GEO. T. SMITH MIDDLINGS PURIFIER CO., Jackson, Mich., U. S. A.

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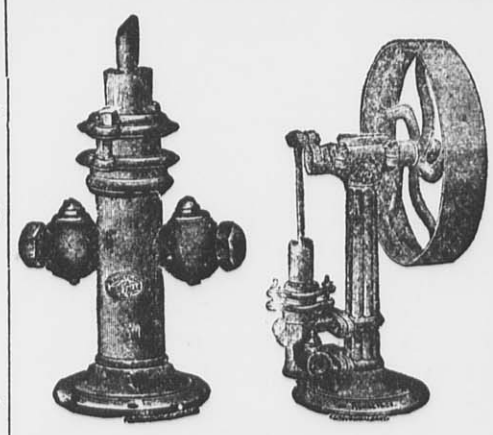
STEAM BOILER PUMPS



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